

The REFRIGERATION & AIRCONDITIONING *Business*

MARCH 1961

EDITORIAL DEPT
UNIVERSITY MICROFILMS INC
313 NORTH FIRST ST
ANN ARBOR MICH 48106

CONTRACT SERVICE

... Is it the answer?

... for the contractor?

... for the customer?

The magazine for the installing contractor-dealer of airconditioning
and commercial and industrial refrigeration



**DESIGNED
TO
DELIVER**



Other large plants may deliver a variety of products but Viking's spacious, modern plant was designed and built from the ground up for one specific purpose: the production of thin-wall copper tube of unsurpassed quality.

The equipment in the plant whether for fabrication or testing is of special design, built to Viking specifications, or by Viking itself.

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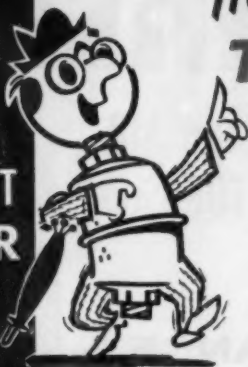
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CLEVELAND 10, OHIO

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**BLOCK DESICCANT
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Mr. A. D. K. says:
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Yourself
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Important Advantages and System Benefits:

1. Exclusive Alco binder assures a block of 97% pure desiccant.
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The one complete line of refrigerant controls: Thermostatic Expansion Valves Refrigerant Distributors Solenoid Valves Refrigerant Filter-Driers Suction Line Regulators Flooded Evaporator Controls and Reversing Valves

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CONDITIONING CONTRACTORS for:

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These are the qualities that mean more profits for you because MILWAUKEE tools stand up under continuous hard use . . . give long, dependable service, yet they cost no more.

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Portable Electric
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16 ga. capacity, heavier on trim cuts, and up to 17 ga. stainless. Full 1/2 HP, 4000 strokes per minute. Cuts tight curves to 1/2" radius. Leaves smooth, clean edges.

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Write for Free literature

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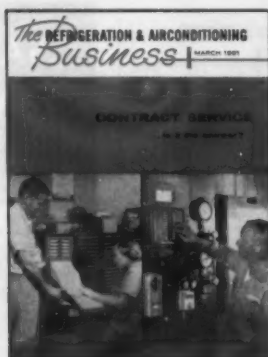
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Look under—Tools—Electric





COVER FEATURE: Here's a first-hand field report on a most controversial subject—contract service. It features both sides of the story: tips from successful contractors who are making money with contract service, and a dissenting vote from a contractor who tried it and dropped it. It all starts on page 43.

FEATURES

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FOR DESCALING CONDENSERS
FOR CIRCULATING R-11 WHEN
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ACE MODEL 77 NRS DIAPHRAGM PUMP

Delivers top cleaning efficiency through reciprocating pump surge action! All parts in contact with liquid completely acid resistant! More good news! The Model 77 NRS has no seals to leak and is so designed that it can run dry for hours without damage.

PLUS A COMPLETE LINE OF

ACE 1750 and 3450 RPM CENTRIFUGAL PUMPS

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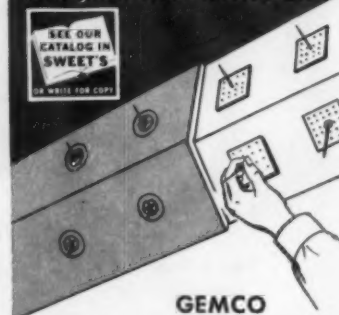
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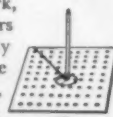
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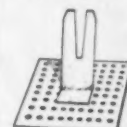
GEMCO

Spindle Hangers and W-A Self-Locking Washers

Ideal for insulation work, Gemco Spindle Hangers are easily and quickly installed... with positive adhesion to concrete, brick or metal. W-A Self-Locking Washers pressed over spindles with minimum effort and lock insulation securely in place.



GEMCO Pronged Hangers



Designed especially for supporting various types of block insulation. Easily applied for positive adhesion. Prongs (available in various lengths from 1 1/8" to 6 1/8") bend over to hold insulation firmly in place.

TUFF-WELD Nylon Hangers

Two-piece hangers... with bases of tough, mold nylon and spindles of metal. Made especially for smooth surfaces.



Spindles snapped into bases as needed; reduces inventory, storage space, freight costs. W-A Self-locking washers hold insulation securely in place.

TUFF-BOND Quik-Set Adhesive (for smooth or slightly irregular surfaces) and Improved General Purpose Adhesive (for rougher surfaces) assure permanent adhesion of hangers when used as directed. Write or wire for details and specifications.

GOODLOE E. MOORE
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MARCH 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS

WHY YOU SHOULD SPECIFY Phelps Dodge Copper Refrigeration Tube

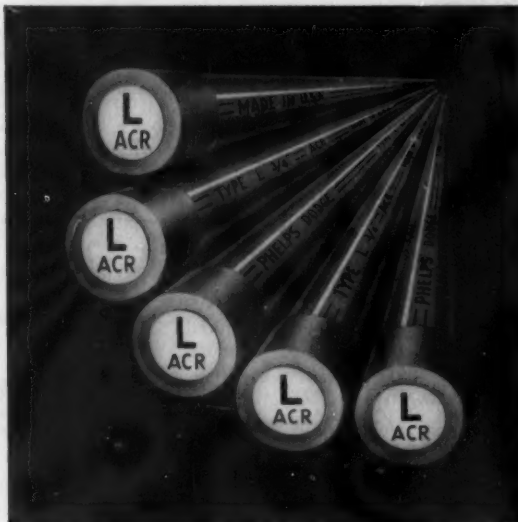
*The Famous Mine-to-Market
Quality Line!*



1 HIGHEST GRADE COPPER. Phelps Dodge refrigeration tube is made of the finest copper from Phelps Dodge's own U.S. open-pit mines. Smelting and refining of the copper ore are also done by Phelps Dodge to assure lasting quality.



2 FINEST QUALITY CONTROL. Phelps Dodge refrigeration tube is carefully controlled for quality throughout fabrication, rigorously tested before being packaged to assure finest tube properties and lasting quality in service.



3 COLOR-CODED ACR TUBE. Phelps Dodge ACR tube is specially cleaned for refrigeration use. Extra-long coded end caps are your assurance of factory-clean tube at job site. Tube is color coded "ACR" for your protection.

Quality tube sold the quality way—through authorized wholesalers!



PHELPS DODGE COPPER PRODUCTS
CORPORATION

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BUSINESS *Briefs*

Does Vacuum-Freeze Drying Process Threaten the Refrigeration Industry?

Several food-processors have test-marketed a variety of foods prepared by vacuum freeze-drying. This process not only preserves color and shape of food, but retains the full taste and texture of the original. Only the water is removed.

This process is not just in laboratory-stage development, says John F. Maguire, product manager of F. J. Stokes Corp.'s vacuum processing equipment department. Production-scale equipment for freeze-drying food is already installed and more units are nearing completion.

Under this process, moisture is removed from the food product under high vacuum conditions, with

only a gentle amount of heat required. The resulting product can be stored indefinitely without refrigeration. And it is so much lighter in weight than any frozen or canned product that it can be shipped economically.

By saving on refrigeration equipment and transportation costs, higher processing costs are compensated. According to Maguire, even these costs are being reduced.

Right now it costs 4 or 5 cents to remove a pound of water from foods. This amount includes labor, power, and heat, plus amortization of equipment over 10 years. Improved methods and equipment are being studied in hopes of reducing costs to 2½ to 3½ cents per pound of water.

Processing techniques have been refined by Stokes so that the company now has plans and floor layouts for freeze-drying systems that will be able to process 5 to 10 tons of food per hour.

Moves Eastern Office

New address for eastern district sales office of "Freon" Products Div., Du Pont Co. is 160 Halsted Rd., East Orange, N.J. Officials feel the move provides larger and more modern office space.

200 Attend Meeting On Hydronic Heating

More than 200 heating contractors from northwestern Ohio attended a service and educational meeting on zone control hydronic heating systems sponsored by Heating Trades Supplies, Inc., Toledo.

Ray C. Edwards, president of Edwards Engineering Corp., was a guest speaker. He noted some changes in zone controlled hydronic heating systems. Edwards said the development of compact heating units and packaged zone control valves has helped in providing superior comfort through hydronics to the public.

Builders, he said, are accepting hydronic heating and have reduced initial installation costs to meet other heating systems. Edwards stressed a basic feature of hydronic heating as the use of a number of thermostats, allowing homeowners to select different temperatures at varying times for various areas within a home.

CALENDAR OF EVENTS

March 27-30, 1961

National Association of Refrigerated Warehouses and Refrigeration Research Foundation
Mark Hopkins Hotel
San Francisco, Calif.

April 23-26, 1961

Oil Heat Institute of America (Annual Convention)
Statler-Hilton Hotel
Washington, D.C.

February 12-15, 1962

12th Exposition of Air-Conditioning, Heating, and Refrigeration Industry
Great Western Exhibit Center
Los Angeles, Calif.

Company Changes Name

Cerro de Pasco Corp., producer and fabricator of nonferrous metals, has changed its name to Cerro Corp.

Opens Tampa Office

A new regional office has been opened by Acme Industries in Tampa, Fla. This is part of the firm's expansion in the southwest which includes opening of a new plant in Greenville, Ala.

Howard W. Ward, sales engineer from Acme's Chicago, Ill., office, is manager of the new office.

Continued on page 8



REGIONAL MANAGERS from the U.S., Canada, and Latin America met in Evansville, Ind., for three days at the sales meeting of Evansville Div., Bendix-Westinghouse Automotive Air Brake Co. Most sessions were devoted to technical developments affecting airconditioning and refrigeration products built by the firm. Several new products were shown at the meeting.

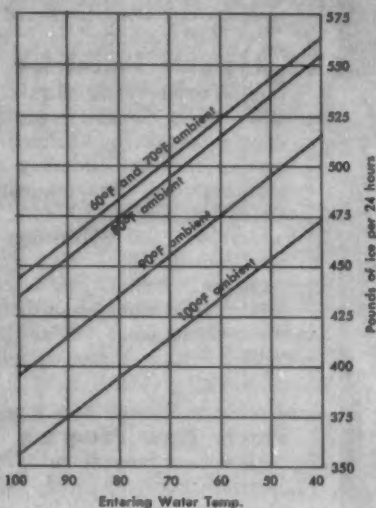
what makes
CRYSTAL TIPS ICE MAKERS
 easier to sell?



22% MORE

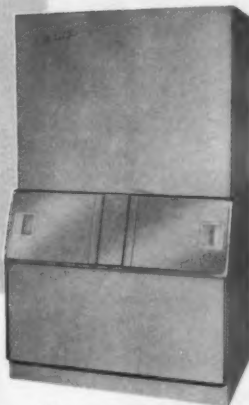
ICE PER DAY!

MODEL B-500B — 24 HOUR ICE PRODUCTION CHART



Check this ice making capacity chart with any other ice maker of similar size and price and you'll discover Crystal Tips tops them all.

You can give your customers *more* ice per day when you deliver the Model B-500-B Crystal Tips ice maker. Check the ice making capacity chart (left) with that of any other ice maker of similar size and price. When you do, you'll see Crystal Tips is "tops". Crystal Tips is also the winner when you compare space requirements, dependability, serviceability and initial investment costs. All this PLUS bigger distributor profits are mighty BIG reasons why you can make more money selling Crystal Tips ice makers.



MODEL B-500 Crystal Tips
 2-in-1 Ice Maker. Air and water cooled models available.

This air-cooled Model B-500 is selling better than ever because it makes more ice per day. It also gives your customers a choice of TWO types of ice... large, round, clear ice cubes or tasty, hard, fast cooling ice chips. Write today for complete facts... mail coupon *now*.

You can make more money selling
 Crystal Tips ice makers.
 Clip and mail coupon today
 and we'll tell you how...



Crystal Tips

First name in automatic ice makers

AMERICAN AUTOMATIC ICE MACHINE CO.
 1773 Park Ave. N.W., Faribault, Minnesota

- ☐ I want to know more about Crystal Tips ice makers and their distributor profit opportunities.
☐ Send literature on Crystal Tips ice makers.

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ADDRESS _____

CITY _____ STATE _____

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BUSINESS *Briefs*

Continued from page 6

Recold Employees End Strike; Reject Unions

A 233-day strike by Recold Corp. employees ended in the rejection of three unions. The National Labor Relations Board election rejected United Auto Workers, International

Association of Machinists, and Teamster Union.

Less than two months after the strike was called, only 12 of 253 strikers had returned to work. The remainder of the positions were filled by permanent replacements.

Two months after the new crew started, production was back to normal. During the dispute, Recold continued expanding operations at two branches and completed a 50,000-sq.-ft. expansion of its home plant.

A by-product of the strike was

the discovery of improved production methods inspired by new employees, new ideas, and closer supervision. Vast production strides were made during the long dispute by new equipment and new plant facilities.

Air Filter Institute Okays New Filter Test

A new test for high efficiency air filter units has been approved by Air Filter Institute. President E. F. Snyder says this test supplements the gravimetric test still used with panel-type filters.

The new method uses atmospheric air drawn through filter papers located upstream and downstream from cleaner under test. After exposure, two samples of filter paper are photometrically compared for light transmission.

Ultrasonic Industries On World-Wide Basis

A world-wide sales organization is being set up by Ultrasonic Industries Inc. for marketing of its popular-priced ultrasonic cleaner. More than 250 distributors, dealers, jobbers, and wholesalers have been signed.

Calvin Edmonds has been appointed sales manager of the western regional office in San Diego, Calif.

Starts New Program

All sales of fan coil and through-the-wall units not sold through wholesale channels will be handled by Industrial Div., American-Standard. The division also announced discontinuation of the "Diaflo" line of room airconditioners.

Air-Maze Now Division Of Rockwell-Standard

Air-Maze Corp., wholly-owned subsidiary of Rockwell-Standard, is now operating as a division of that company. Air-Maze of Cleveland, Ohio, produces a line of gas and liquid filters for many industries, including airconditioning.

W. B. Watterson is general manager of the division.

Continued on page 10

TYPE 56



First choice of Manufacturers!

A condenser water regulator with a smashing success story! In three short years the Type 56 Condenser Water Regulator has soared to top choice of the industry—top choice of foremost manufacturers of refrigeration equipment, engineers, contractors, service men. Reasons? Just to mention a few:

- Wide range**—Instantly adjustable to either R-12 or R-22 without changing springs—by simply turning knurled cap. (Setting easily made tamper-proof when desirable.)
- Fits in**—Small, but plenty of capacity, smoothest modulation, remarkable flow characteristics.
- Marsh quality throughout**—Monel seat beads that minimize wire drawing; leak proof bellows; provision for manual flushing after installation. More efficiency; more range; more downright value! Bulletin gives full details.

Your wholesaler stocks it!

MARSH INSTRUMENT COMPANY
Dept. F, Skokie, Ill.
Division of Colorado Oil and Gas Corporation
Marsh Instrument & Valve Co. (Canada) Ltd., 6307 103rd St., Edmonton, Alberta, Canada, Houston Branch Plant 1121 Rockwell St., Sect. 15, Houston, Texas, Eastern Seaboard Warehouse: Marsh Instrument Company, 1208 Anderson Ave., Fort Lee, N.J.

MARSH Refrigeration Instruments

Gauges • Thermometers • Valves

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CONTRACTOR SAYS:

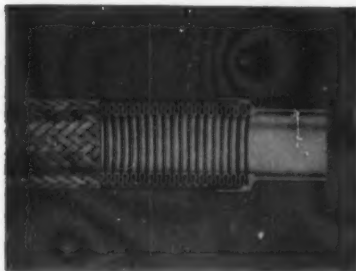
**"Using Anaconda VE's
is part of doing
the job right
the first time"**

"With us it's the old story of doing it right the first time," says M. Celli of Bridgeport Fixture Company, refrigeration contractor of Bridgeport, Conn. "Part of doing it right involves choosing the most dependable parts. Over the years we've found that using Anaconda VE's is part of doing it right the first time."

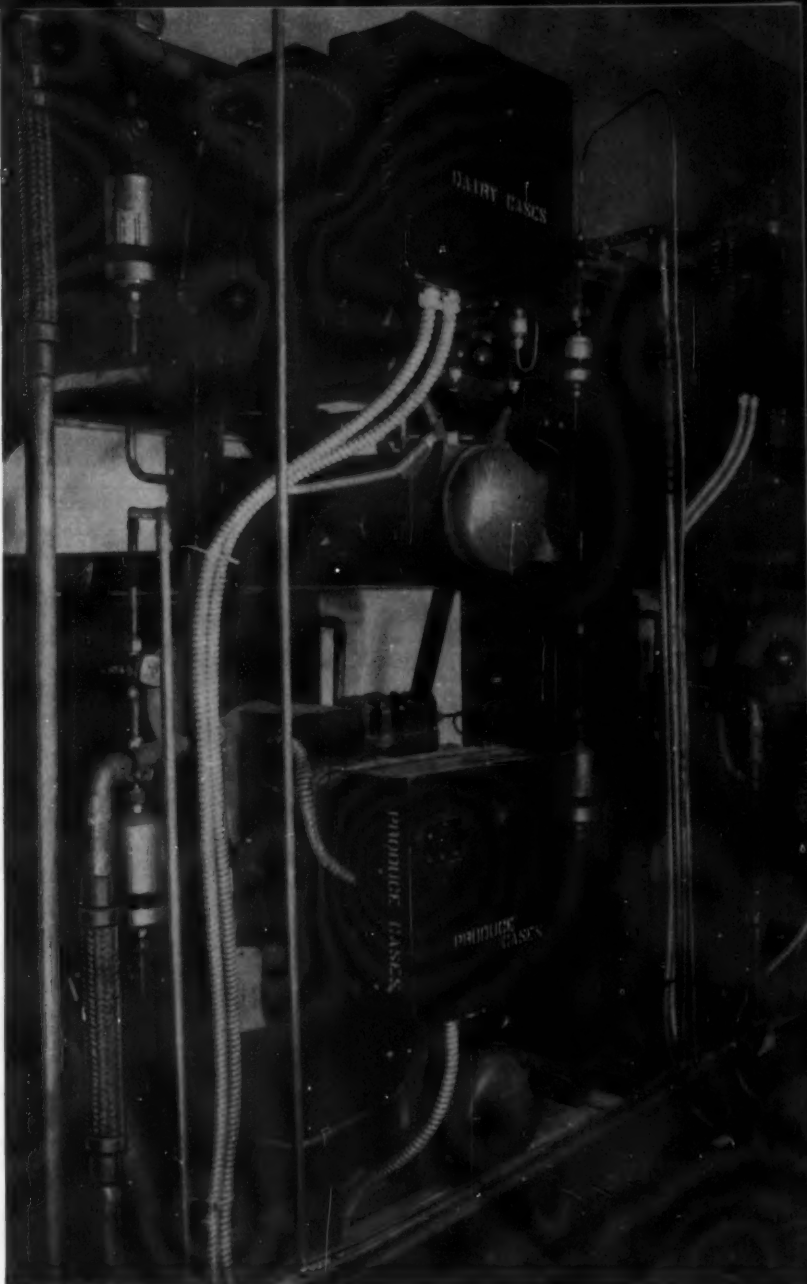
OWNER SAYS:

"We're customer-minded right down to choosing equipment that will keep working for them. That's why we were satisfied when the contractor used Anaconda VE's when we rebuilt," says Tofie George, President of George's Market, Watertown, Conn.

A section of the compressor units for the refrigeration system at George's Market in Watertown, Conn., which was recently rebuilt and modernized. Anaconda Vibration Eliminators were used throughout to dampen and absorb destructive vibration. ▶



Anaconda VE, the only connector having a flexible core of seamless tin-bronze and special high-tensile bronze wire braiding—for longest service in dampening vibration in piping.



Quality Anaconda VE's are dependable. The tin-bronze flexible core and wire braiding give Anaconda VE's the tensile and fatigue strength necessary to control harmful transfer of vibration for millions of cycles. They require no maintenance, and are available in standard lengths and diameters. Anaconda VE's are stocked by lead-

ing wholesale distributors. VE's are recognized by Underwriters' Laboratories, Inc., under File SA 2585. For more information see your Anaconda Metal Hose representative, or write: Anaconda Metal Hose, P.O. Box 791, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

ANACONDA[®] VE's

VIBRATION ELIMINATORS

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BUSINESS *Briefs*

Continued from page 8

Whirlpool Gets Contract For Sub Food System

A contract has been awarded Whirlpool Corp. research laboratories to develop and fabricate a prototype thermoelectric refrigeration system for frozen and chilled

food storage spaces for a new type of nuclear submarine.

The system will be based on previous studies and experimental developments in thermoelectric cooling already completed for the U.S. Navy Bureau of Ships under previous contracts.

Through this development and discovery of thermoelectric materials, it is now feasible to use these systems for special applications such as those requiring no moving parts, and accurate temperature control from ease of reversibility.

MAKE SERVICE MORE PROFITABLE



PORTABLE HIGH VACUUM PUMPS

Speed up the service operation . . . get more jobs done per day . . . do a better job either in the shop or on location. KINNEY Portable High Vacuum Pumps provide the man-hour savings that MAKE SERVICE MORE PROFITABLE.

These famous KINNEY units enable you to QUICKLY Leak Test . . . Evacuate . . . Dehydrate Freon Refrigeration and Air Conditioning Equipment wherever it may be. The KC-3R is especially suited to systems rated at 10 tons or less . . . the KC-8R is for larger systems, above 10 tons capacity.

Each of these KINNEY units includes: a Bourdon type Vacuum Gage, Automatic Vacuum Breaker (in case of power failure), male fittings for connecting to copper tube suction line, 10 ft. plug in cord with snap switch and carrier handle.

Get the complete story . . . write for Bulletin 4570.1 today.



KINNEY VACUUM DIVISION THE NEW YORK AIR BRAKE COMPANY

3678C WASHINGTON STREET • BOSTON 38 • MASS.

Please send me full information on KINNEY Portable High Vacuum Service Pumps.

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

WRITE FOR
BULLETIN
NO. 4570.1
AND PRICES
TODAY!

4 U.S. Corporations Establish Foreign Ties

A quartet of U.S. refrigeration and airconditioning firms either have formed companies abroad or signed a foreign firm to handle its line of products. Companies are:

Trane Co.—Formed two subsidiaries, both to be headed by Robert P. Yeomans, company general counsel and secretary. Trane S.A. is incorporated in Switzerland, with head office in Fribourg. A branch office is set up in Brussels, Belgium. The head office of Trane Ltd. is in London, England. Trane's Caribbean sales office, located in San Juan, P.R., is set up to serve that area. Jacques Dreyfuss, formerly sales engineer with the firm's Syracuse, N.Y., office is manager.

Recold Corp.—Signed license agreement with Sociedad Argentina Tecnica Industrial y Comercial of Buenos Aires to make full line of its refrigeration and airconditioning products. The Argentine firm will distribute throughout its country and Uruguay.

Controls Co. of America—Organized Controls Co. of America Ltd. to manufacture and sell heating and appliance controls in Great Britain. It will be under direction of D. A. O'Leary, who is president of the firm's Canadian subsidiary.

Penn Controls, Inc.—Formed Japanese company to manufacture automatic controls in that country. New company, Saginomiya-Penn Controls Ltd., is jointly owned by Saginomiya Seisakusho Co. Ltd. and Penn Controls.

Writes 2 New Booklets

Dr. Charles Lapp, professor of marketing at Washington University, has written two new booklets for salesmen—"Steps to More Sales," and "Sixty Suggested Actions for Salesmen." Both are available from Business Book Co., 7162 Pershing Ave., St. Louis 30, Mo., for 50 cents each.

Square D Co. Expands Its Duct Product Line

Square D Co. has purchased from Gateway Erectors, Inc. of Chicago, Ill., that portion of its business that manufactures a complete line of

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steel duct for underfloor installation of electrical and communication wiring.

Lawrence G. Maechten, president of Square D, says Gateway's duct is a logical supplement to his broad line of electrical distribution and control equipment.

Cargo Reefer Doors Are Made of Plastic

A weight savings of 1500 lb. per cold storage doorway is provided by new plastic cargo reefer doors manufactured by Jamison Cold Storage Door Co.

These doors, which provide an average 12,000-lb. weight reduc-



tion for typical reefer ships, offer improved insulation without sacrificing strength.

Heavy-gage galvanized sheet steel baffles on outside of doors protect against damage by cargo and, because of the light weight, persons handling these doors are protected against injuries from swinging doors.

Railway Equipment Co. To Handle Air Filters

U.S. Railway Equipment Co. of Chicago, Ill., will handle panel air filters throughout the railroad industry for Union Carbide Development Co., Div. of Union Carbide Corp.

These filters are already in wide use on many railroad sleeping cars and club cars.

New System Designed For Transporting Food

A solution to the problem of maintaining below zero temperature of frozen food in transport

may be offered soon by E. F. Ryan, president of Rail-Trailer Co., Chicago, Ill.

"We have been able to develop a trailer specifically for transporting frozen foods," Ryan says. "It has an entirely new refrigeration system and is insulated to hold -10 to -20 F for at least five days."

This same method, Ryan reports, may be used to modernize existing refrigerator trailers which now can not hold low temperatures for as long as necessary. "Application of this new insulation to some

80,000 existing reefers can be a boon to the frozen food industry," commented Ryan. "These reefers cost about \$12,000 each and are too new to trade-in or to junk."

Sherer-Gillett Names Twist to Head Division

John S. Twist has been named to head Sherer-Gillett Co.'s new products division.

Now under production is a con-

Continued on page 106

GOLD SEAL LINE TAP VALVES



by **WATSCO**

U.S. Pat. No. 2,827,913

Taps into any refrigeration line from 3/16" O.D. to 5/8" O.D. to charge, discharge, and test a system in minutes.

- PROVIDES A POSITIVE SEALED PORT AT A LOW COST.
- EASY INSTALLATION FROM THE TOP USING 2 PHILLIPS TYPE SCREWS.
- MAY BE INSTALLED WITHOUT REFRIGERANT LOSS EVEN WHILE UNIT IS OPERATING.
- FEATURES 3 POINT SEALING FOR MAXIMUM PROTECTION AGAINST LEAKAGE.

In addition to the above features you will find the Gold Seal Line Tap Valve cannot vibrate loose, will not distort the tubing and has no top heavy assembly. It requires a minimum of space and is tamper proof—Use with Gold Seal Control Valve CV-1G or CV-2G.

GOLD SEAL
SWIVEL CONTROL VALVE




CV-1G CV-2G

Designed to operate all Line Tap, Line Port, Can Tap and Access Valves, the Gold Seal Control Valve incorporates a swivel top, adjustable to an easy working position. Use part CV-1G (single port valve) or part CV-2G (double port valve).

For additional information, ask your wholesaler or write to Dept. B-3.



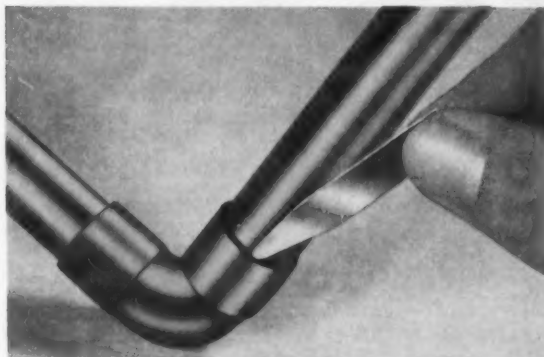
INC.

1020 EAST 15th STREET, HIALEAH, FLORIDA



LESS THAN THREE HAIRBREADTHS

is your margin of safety when installing a copper plumbing system. "Report BMS 58" of the National Bureau of Standards, reporting on tests of $\frac{1}{4}$ " joints, says—"When the clearance is greater than 0.008 inch, there is difficulty in filling the joint properly."



THE NIBCO TESTER TELLS YOU positively whether you can be sure of a good soldered joint. If the point of it can be inserted between the tube and the fitting . . . *look out!* The tube is either too small or the fitting is too big. The maximum allowable tolerance between tube and fitting is 0.009 inch—even through 12" size range, and the NIBCO TESTER is 0.010 inch in thickness. If the joint is too sloppy you will have difficulty in soldering, and in extreme cases it can mean failure after the system starts working.

FREE JOINT TESTER!

NIBCO MAKES SURE

NIBCO fittings are inspected and carefully tested to make certain they meet A.S.A. standards of size and roundness. It's a program that is readily appreciated by those who have installed millions of NIBCO $\frac{1}{2}$ " wrot elbows during our "Lucky Buck" promotion. This kind of quality control costs NIBCO more than \$400,000 per year. But, we think it is worth every penny . . . and so do the thousands of contractors who always ask for NIBCO!

SEND YOUR PROBLEMS TO US

If extra soldering time is cutting into your profits, if you are being plagued with joint failures . . . try the NIBCO TESTER. Anytime you can get its tip between tube and fitting, we'll look for the reason without charge. Just send along six inches of the tube with the fitting (any brand), and our technicians will provide you an authoritative report.



SEND FOR THE NEW

NIBCO

TROUBLE SPOTTER!

NIBCO INC.—Dept. L-6903 Elkhart, Indiana

Please send your free NIBCO TESTER to check soldering clearances between tube and fittings.

name _____

firm _____

address _____

city, state _____

circle 54 on reader service card

MARCH 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS

SIGNS

CAPPED WITH
RE-USABLE END SEALS



Manufactured by Wolverine Tube expressly for . . .

WOLVERINE TUBE

1/2"

3/4" O.D.

AIR CONDITIONING
AND REFRIGERATION



WOLVERINE TUBE

WOLVERINE TUBE

OF THE TIMES

Always DRY
Always CLEAN



COLOR CODED



Buy Wolverine tube from
your WHOLESALER



WOLVERINE TUBE
DIVISION OF

Calumet & Hecla, Inc.

DEPT. K, 17228 SOUTHFIELD RD., ALLEN PARK, MICH.
Manufacturers of Quality Controlled Tubing

PLANTS IN DETROIT, MICHIGAN AND DECATUR, ALABAMA
SALES OFFICES IN PRINCIPAL CITIES

circle 87 on reader service card

Ready soon—see your

NEW! Simple field test for hermetic burnouts

plus

NEW! Easy way to clean out mildly contaminated systems



Full information on these important new developments—plus test kits and pressurized cylinders of "Genetron" 11—will be available from your wholesaler about March 15. See him then!

Genetron Wholesaler*!

General Chemical takes the guesswork out of hermetic burnouts

One of the oldest and toughest service problems in the refrigeration and air-conditioning industry has been licked!

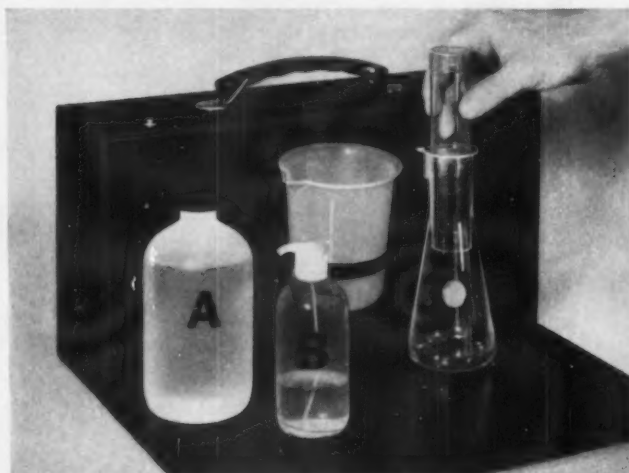
Until now, there was no quick, on-the-spot test to determine the degree of acidity in a system after hermetic burnout . . . and there was no easy way to tell when the acid in a system had been cleaned out.

To solve this problem, General Chemical has de-

veloped the first simple field test for checking degree of contamination in a burned-out system—before and after cleanout. Yes — we've taken the guesswork out of hermetic burnouts.

In addition, General Chemical has developed an easy, short-cut procedure for cleaning out mildly contaminated systems by using pressurized cylinders of "Genetron" 11 to flush the unit — quickly and without pumping.

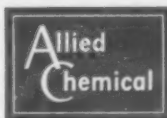
See how these new developments can save you time, labor and material costs:



First practical field test method! With this handy, portable kit developed by General Chemical, you can now quickly and easily determine extent of contamination in a system after hermetic burnout. Simple tests show extent of burnout contamination and what clean-up procedure should be used. Also show when cleaning is complete.

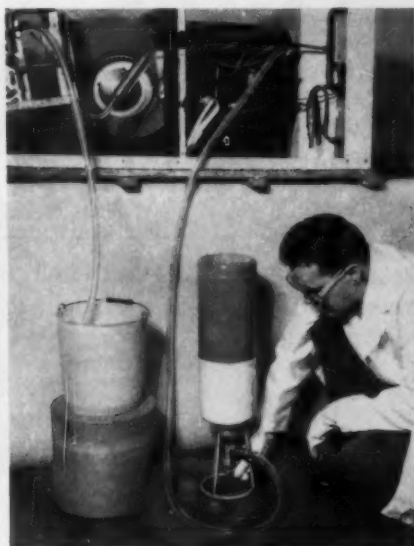
Here is still another contribution by General Chemical to the advancement of the air conditioning and refrigeration industry. These new procedures will be demonstrated at meetings conducted by "Genetron" wholesalers, RSES chapters and other organizations, in the months to come.

genetron®
super-dry refrigerants



circle 8 on reader service card

THE REFRIGERATION & AIRCONDITIONING BUSINESS/MARCH 1961



New quick, easy way to clean minor burnouts! Mildly contaminated systems can now be flushed and cleaned without pumping by using special new pressurized cylinders of "Genetron" 11 solvent. Prepared especially for flushing burnouts, these pressurized cylinders will soon be available from your wholesaler. An excellent solvent, "Genetron" 11 flushes acids and moisture, loosens and removes solids and is safe to handle.

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N.Y.

BUSINESS Trends

HOW OUR BUSINESS IS DOING

SALES IN NOVEMBER (Bureau of Census) for airconditioning and commercial refrigeration equipment distributors, contractors, and wholesalers:

DOWN 8% from a year ago

DOWN 15% from previous month

INVENTORIES IN NOVEMBER (Bureau of Census) for airconditioning and commercial refrigeration equipment distributors, contractors, and wholesalers:

UP 13% from a year ago

DOWN 4% from previous month

CURRENT LIABILITIES IN DECEMBER for business failures of 5 airconditioning contractors totaled \$81,000. (Dun & Bradstreet) This was:

UP \$47,000 for 4 failures a year ago

UP \$14,000 for 2 failures in November

GENERAL BUSINESS INDICATORS

	Latest Period	Previous Period	% Change
Housing Starts (thousands)			Down
Month ending 12/31/60	72.7	95.6	23.9
New Construction , put in place (\$ billions)			Down
Month ending 12/31/60	4.4	4.8	8.3
Unemployment (% of labor force)			Up
Month ending 12/31/60	6.8	6.3	7.9
Manufacturers' Inventories (\$ billions)			Down
Month ending 11/30/60	54.0	54.4	0.7
Manufacturers' Unfilled Orders (\$ billions)			Down
Month ending 11/30/60	45.5	46.4	1.9
Retail Sales (\$ billions)			Up
Month ending 12/31/60	22.4	18.4	21.8
Personal Saving (\$ billions)			Up
Quarter ending 9/30/60	29.2	25.2	15.9
Disposable Personal Income (\$ billions)			Up
Quarter ending 9/30/60	357.5	354.1	0.96
Gross National Product (\$ billions)			Down
Quarter ending 9/30/60	503.5	505.0	0.29
Industrial Production Index (1957=100)			Down
Month ending 12/31/60	102	106	3.8

Source: U.S. Dept. of Commerce

GOVERNMENT PUBLICATIONS:

your taxes pay for them —why not use them?

You can pick up valuable business pointers from government publications aimed directly at the refrigeration and airconditioning contractor. You may get copies by sending a check or money order to U.S. Government Printing Office, Division of Public Documents, Washington 25, D.C.

Here are just a few booklets offered:

A Handbook of Small Business Finance—Gives basic information to owners in obtaining financial assistance and guides them in measuring the progress of their operations. Presents useful ideas through which owners of small firms can enlarge their knowledge of the best methods and practices of business finance. (30 cents)

Small Marketers Aids—Compilation of publications for owners and operators of small marketing businesses. Annual No. 1 (45 cents) contains issues 1 through 13; Annual No. 2 (40 cents), issues 14 through 24.

Pipes, Ducts, and Fittings for Warm-Air Heating and Air-Conditioning Systems—Establishes a standard of practice in production, distribution, and use for various kinds and sizes of prefabricated pipes, ducts, and fittings. (15 cents)

Federal Policies and Programs that Benefit Small Business (15 cents).

Guides for Business Analysis and Profit Evaluation (30 cents).

The Right to Buy, and Its Denial to Small Business—Prepared by Vernon A. Mund for Senate committee on small business. (35 cents)

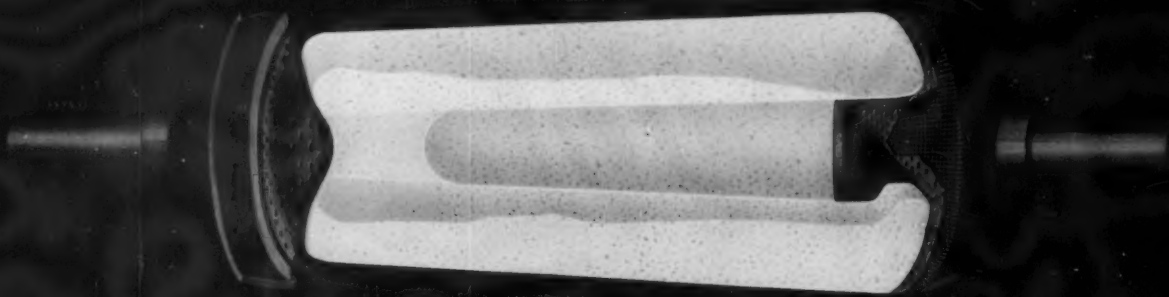
Second Progress Report by the Cabinet Committee on Small Business (15 cents).

Small Business Management Series—Series of 25 individual booklets on a wide variety of subjects. Each booklet costs from 15 to 35 cents each.

Management Aids for Small Business—A compilation of publications issued for small business owners and operators. Annual No. 1, issues 1 through 31, is 65 cents; Annual No. 2, issues 32 through 52, 55 cents; Annual No. 3, issues 53 through 63, 45 cents; Annual No. 4, issues 64 through 74, 45 cents; Annual No. 5, issues 75 through 85, 45 cents; and Annual No. 6, issues 86 through 95, 30 cents.



ANNOUNCING...THE GREATEST ADVANCEMENT
IN REFRIGERATION DRIERS SINCE MOLECULAR SIEVES!



new **KMP[®] FILTER-KORE** *drier...*
the only solid core drier made of
100% Molecular Sieves

EXCLUSIVE!

**LOWEST PRESSURE
DROP** per unit area
of core of any
block desiccant

EXCLUSIVE!

**LARGEST DRYING
CAPACITY** per cubic
inch of core of any
block desiccant

EXCLUSIVE!

**GREATEST ACID
REMOVAL...**

Maximum protection
of system from acid
and sludge after
motor burnout

KMP

KENMORE MACHINE PRODUCTS, INC. • LYONS, NEW YORK

KMP FILTER-KORE *drier...*

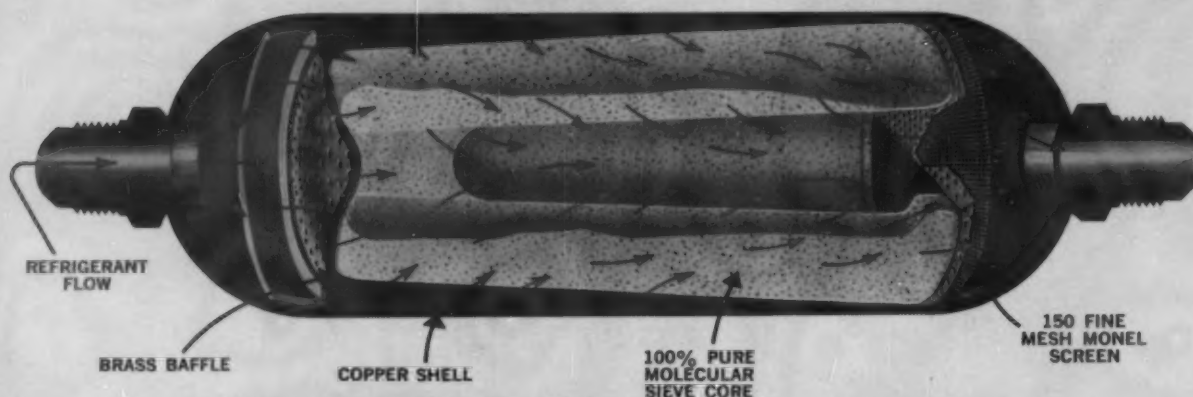
HIGHEST CAPACITY... MOST EFFICIENT AND TROUBLE-FREE

By eliminating plastics, fibre board, cotton and other foreign materials from the inside of the drier and by using a solid core of 100% pure Molecular Sieves without diluents, the KMP FILTER-KORE drier gives maximum protection (better than any other desiccant) to the system from acid and sludge.

FILTER-KORE delivers fine, selective filtration without powdering or channelling of refrigerant through

the core. The drier is manufactured from non-corrosive materials compatible with refrigerants and oil. Before sealing the highest degree of reactivation is used of any block desiccant—600°F at 500 micron vacuum.

For the most efficient, the longest lasting, the most trouble-free drier made, your selection should be KMP FILTER-KORE.



Complete Range of Sizes from 1 Ton through 15 Tons.

COMPARISON OF BLOCK DESICCANT DRIERS

	DRIER A	DRIER B	DRIER C	KMP FILTER-KORE
1. USE ALL MOLECULAR SIEVE	NO	NO	NO	YES
2. ACID REMOVAL	GOOD	GOOD	GOOD	EXCELLENT
3. FULL FLOW FILTRATION	YES	YES	YES	YES
4. HIGH TEMPERATURE WATER CAPACITY	FAIR	FAIR	FAIR	EXCELLENT
5. WILL HOLD AS MUCH MOISTURE AT 75°F AND 125°F	NO	NO	NO	YES
6. ALL NON-CORROSIVE METAL INTERNAL CONSTRUCTION	NO	NO	NO	YES

KMP FILTER-KORE SPECIFICATIONS

Model Filter-Flare	SAE Flare	Dia.	Length	Water Capacity Ratings				Filter Area Sq. In.	Recommended Tonnage	
				R-12		R-22			R-12	R-22
1FK	¼"	1⅝"	4⅞"	43	43	32½	32½	9	1	¾
2FK	¼"	1⅝"	5⅞"	70	70	53½	53½	12	2	1
*Also available in ⅜ SAE Flare										
3FK	¼"	1⅝"	6⅞"	100	100	75	75	13	3	1½
*Also available in ⅜ and ½ SAE Flare										
4FK	⅝"	2¼"	7	160	160	122	122	20	4	2½
*Also available in ⅜, ½ and ⅝ SAE Flare										
8FK	¾"	2¼"	9¼"	325	325	247	247	29	8	5
*Also available in ½ and ¾ SAE Flare										
10FK	½"	3	9⅞"	400	400	302	302	35	10	6
*Also available in ⅝ SAE Flare										
15FK	½"	3	11⅞"	600	600	455	455	54½	15	9
*Also available in ¾ and ¾ SAE Flare										

NOTE: FILTER-KORE DRIERS AVAILABLE IN ALL SIZES WITH SOLDER CONNECTIONS

KMP

KENMORE MACHINE PRODUCTS, INC. • LYONS, NEW YORK
IN CANADA: Kenmore Machine Products (Canada) Limited, Grimsby, Ontario
IN EUROPE: Kenmore Inc., A.S., Oslo, Norway

BIG NEWS FROM TENNEY



THE HUSTLER IS HERE!

Powerful new line of refrigeration units for reach-ins, under-counter boxes, salad cases, beer coolers, wall dairy and beverage coolers, pastry boxes, and all comparable refrigeration installations.

Union, N. J. — Tenney's new line of Hustler unit coolers are here. Lightweight, rustproof — sleek, sturdy, silent. They can be quickly and easily installed, in all locations, with the slotted, adjustable hangers mounted on the unit. And the price is right.

Outstanding features

The Hustler features controlled directional air flow, quiet and efficient fan motor arrangements. Connections located for use on either end with knockouts. Drain

fitting mounted for copper tube or hose.

Looks match performance

Dressed in a handsome, all-aluminum patterned casing, the Hustler's rugged appearance matches its performance. Construction conforms to Tenney quality standards.

Available to all

The Hustler is available to O.E.M.'s, and also to servicemen and contractors through refrigeration wholesalers. Write for Bulletin 119-59

Check these specs!

Model	CAPACITY B.T.U./HOUR	
	10° T.D.	15° T.D.
H-13	1360	2040
H-17	1750	2625
H-23	2380	3570
H-30	3020	4530

Model	CIRCULATION		
	C.F.M.	FAN DIA.	Mtr. Watts
H-13	205	8"	46
H-17	280	8"	50
H-23	320	8"	50
H-30	400	(2) 8"	90



Engineers and Manufacturers
of Refrigeration and
Environmental Equipment

Tenney

ENGINEERING, INC.

1090 Springfield Road, Union, N. J. • Plants: Union N. J. and Wilmington, N. C.

Product DATA

Roof-top air conditioner

Product: "Skyliner" line of roof-top air conditioner.

Manufacturer: Janitrol Heating and Air Conditioning Div., Midland-Ross Corp., Columbus, Ohio.



Features: Designed specially for 1-story buildings, unit features gas-fired heating and air-cooled airconditioning. Circulates air through short concentric supply-return duct and ceiling diffuser beneath unit. No ductwork, vent stack, or inside space needed. Requires no water or sewage service, no refrigerant piping or charging, and no complicated wiring. Adjustable fresh air inlet permits blending of filtered outside makeup air up to % of total volume.

circle 136 on reader service card

Ice cube vendor

Product: Ice cube vending machine ("Icelander").

Manufacturer: U.S. Vending Corp., New York, N.Y.

Features: Installation requires only water line and power source. Capacity up to 1600 lb. per day. Machine makes, stores, and vends cubes. Is built around 1-piece welded frame 10' high.

circle 137 on reader service card

Electric heating bands

Product: Electric heating bands.

Manufacturer: Easy-Heat, Inc., Lakeville, Ind.

Features: Supply supplementary heat to drain tubes of low temperature cooler coils. In lengths from 3 to 100' for 110 v.; from 6 to 200' for 220 v. Each dissipates 7 watts per ft. Is a waterproof, molded vinyl band which holds pre-spaced heater wire safely in place in separate channels. All connections and end are hermetically sealed and unit comes attached to cold lead wire and molded plug.

circle 138 on reader service card

Portable air purifier

Product: "Safe-Air" portable air purifier (Types R and S).

Manufacturer: Kauffman Air Conditioning Co., St. Louis, Mo.

Features: For rooms up to 3500 cu.ft. or in multiples for larger areas. Fan circulates 50 cu.ft. fresh air per minute. Has three ozone-producing lamps that have life of 6000 hours and emits ultra violet energy for germicidal purposes and ozone production. In round and square designs.

circle 139 on reader service card

Expansion valve

Product: Compact expansion valve with high-capacity performance and simplified numbering system (Model 900).

Manufacturer: Controls Div., American-Standard, Detroit, Mich.

Features: In both internally and externally equalized and pressure-limiting types, has 0.5 to 3 tons capacity with R-12 and 0.8 to 5 tons capacity with R-22. Provides equivalent capacity and installed without piping. Has removable stainless steel power element, high density brass forged valve body, large inlet



strainer, and only 3-part inlet location. Five-digit numbering system: first digit is valve series; second and third digits, capacity rating and refrigerant; fourth digit, type of power element charge of pressure-limit rating; fifth digit, inlet and outlet connections.

circle 140 on reader service card

Air duct

Product: "Armaglas" prefabricated air duct molded from fine glass fibers.

Manufacturer: Armstrong Cork Co., Lancaster, Pa.



Features: Furnished in 6' sections and made to same i.d. as standard galvanized sheet metal furnace pipe. Has K factor 0.22 at 75 F mean. Fibers form millions of tiny air spaces that resist heat flow. In place, material has noise level reduction of 2 to 3 db/ft. Air flow friction losses and air handling capacities same as for round sheet metal ducts. Acts as air duct, thermal insulation, and sound absorber.

circle 141 on reader service card

Electronic home air filter

Product: "Electro-Klean" dry type electronic home air filter.

Manufacturer: American Air Filter Co., Louisville, Ky.

Features: Redesigned console exterior has white plastic front panel rimmed with ledge of gold metal. Gold encircled neon indicator glows when filter is operating. Electrostatic printed circuit in filter cells improved to trap and hold up to 90% of all air-borne dirt, dust, and pollen. For installation in return air duct of any forced air furnace or central air-conditioner. Fits into variety of duct work locations. Does not require any plumbing or sewage connections, no special electrical circuits.

circle 142 on reader service card

Insulating foam

Product: Controllable, self-foaming polyurethane insulating foam ("Flo-Foam").

Manufacturer: Foam Products Mfg. Ltd., Berkeley, Calif.

Features: Has K factor of 0.14 at 75 F and moisture vapor transmission of 0.92 perms. Exothermic temperature 1750 F created during 2-minute expanding reaction time, creating partial vacuum of refrigerant vapor in 98% closed cell system. For use on pipe and ductwork where temperatures less than 150 F.

circle 143 on reader service card

Spray cooler

Product: Series 3900 spray coolers.

Manufacturer: Niagara Blower Co., New York, N.Y.

Features: Chills air by passing it across sprayed coils in which refrigerant is expanded. Air enters side of unit above coils, passes downward through spray chamber, over refrigerated surface, then upward through fans to discharge outlets or ducts for distribution. Sprays either brine or "No-Frost" liquid (organic compound), prevents ice formation on coils. Air capacities from 2100 to 24,000 cfm per unit; cooling capacity from 1660 to 15,700 basic ratings in Btuh

Continued on page 22



For Performance — Capacity —
Low Maintenance

Select a

LARKIN ZEPHYRCON

Air-Cooled Condenser

9 Belt-Driven Models—5 to 40 Tons 5 Direct-Drive Models—2 to 10 Tons

ENGINEERED FOR PARALLEL USE FOR VIRTUALLY ANY CAPACITY

Larkin Zephyrcon Air-Cooled Condensers are available in two series: direct-drive FC models—for economy and minimum maintenance; and belt-driven BFC models—for larger installations and the lowest possible noise level.

Multiple circuits—for operating more than one compressor from a single condenser—are available for all models at no extra cost.

PEAK PERFORMANCE YEAR 'ROUND

When used with the Larkin Posi-Trol control system, which maintains head pressures in low ambient temperatures, the Larkin Zephyrcon functions at peak performance the year 'round in any climate.

Compare the features point for point; check the performance data, and make the wise selection—Larkin Zephyrcon Air Cooled Condenser.

BASIC RATINGS

FC SERIES — DIRECT DRIVE

Model No.	Capacity at Evaporator BTU/HR	Tons	Cfm
FC-2	27,700	2.30	2500
FC-3	37,350	3.21	3500
FC-5	62,500	5.21	5500
FC-8	95,600	7.96	7500
FC-10	124,000	10.3	9100

BFC SERIES — BELT DRIVEN

Model No.	Capacity at Evaporator BTU/HR	Tons	Cfm
BFC-5	62,500	5.21	5500
BFC-8	95,600	7.96	7500
BFC-10	124,000	10.3	9100
BFC-13	149,200	12.4	12000
BFC-16	191,200	15.92	15000
BFC-20	240,000	20.6	18200
BFC-26	298,400	24.8	24000
BFC-32	382,400	31.8	30000
BFC-40	496,000	41.3	36400

OUTSTANDING FEATURES

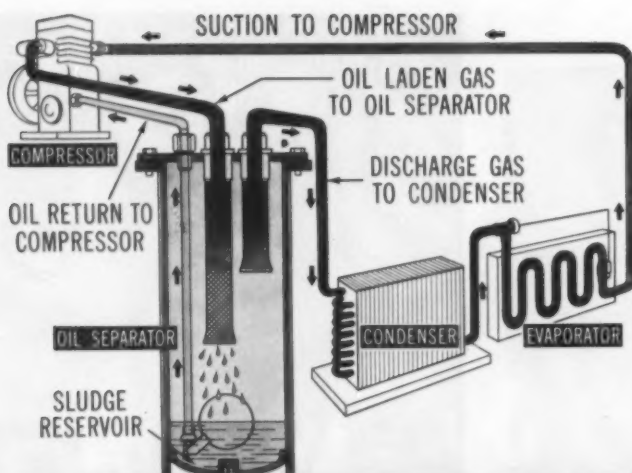
- Patented Larkin cross-fin coil — aluminum fins and staggered copper tubes.
- For use indoors or outdoors.
- A single large fan on BFC model assures low operating noise level.
- Motor on BFC model is standard NEMA design mounted on adjustable base.
- Slow speed motor on FC model is permanently lubricated, has overload protection, and is mounted on resilient base.
- Casing is of heavy-gauge steel.
- Unit finished with baked-on epoxy primer and melamine top coat for maximum protection.
- Motor is enclosed in casing, protected from the weather.
- Discharge shield available.
- Fan Guard is standard equipment.
- Return bands protected by heavy-gauge shield.



See Your Wholesaler
Or write for Bulletin 1031-C



circle 40 on reader service card



Keep oil where it belongs...with a **TEMPRITE** OIL SEPARATOR

- ① It is absolutely essential to completely lubricate all moving parts of the refrigeration compressor. Why risk the possibility of a burned out compressor due to loss of oil?
- ② Constant clean oil lengthens compressor life. The oil return valve in a Temprite Oil Separator is located above the sludge reservoir... allowing the automatic return of clean oil to the compressor.
- ③ A sludge reservoir is provided in all Temprite Oil Separators to trap carbon, sludge and foreign substances, preventing their continued flow through the refrigerating system.
- ④ Keeping excess oil out of the condenser, liquid receiver, expansion valve and evaporator will increase refrigeration efficiency.



Temprite Oil Separator muffles sound.
Capacities from 1/4 h.p. to 225 h.p.



Ask your refrigeration wholesaler or mail us coupon below.

TEMPRITE
The Quality Line

TEMPRITE PRODUCTS CORPORATION
BOX 72-B, East Maple Rd., Birmingham, Michigan
Send me Oil Separator brochure No. T-447

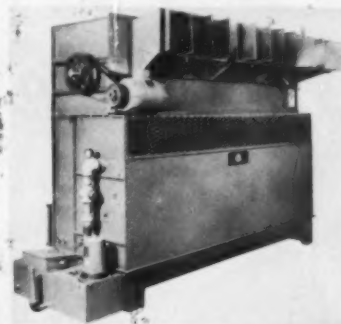
Name _____
Address _____
City _____ Zone _____ State _____

circle 71 on reader service card

Product DATA

Continued from page 20

temperature difference between entering air and refrigerant temperature. Eight



units available, each giving choice of four and eight coils in finned surface models, or eight, 10, and 12 coils in prime surface models.

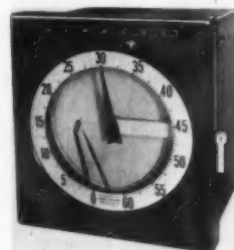
circle 144 on reader service card

Chart controllers

Product: "Double-O" line of round chart recording and indicating controllers.

Manufacturer: Wheelco Industrial Instruments Div., Barber-Colman Co., Rockford, Ill.

Features: Are completely self-contained, null-balancing instruments need-



ing only external sensing device. Can resolve speed, strain, hydrogen ion, and other quantities into electrical signals. Give 1/2% accuracy for all scale spans in pyrometric range. All thermocouple and radiation pyrometer ranges down to 5 mv full scale are available and full-scale balance speed is 4 sec.

circle 145 on reader service card

Portable vacuum system

Product: "Port-a-Vac" portable vacuum pumping system, packaged in a service kit.

Manufacturer: NRC Equipment Corp., Newton, Mass.

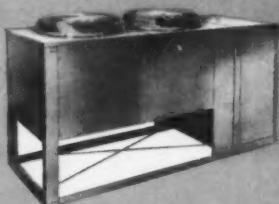
Features: System comprises 2-stage rotary gas ballast vacuum pump and motor, thermocouple vacuum gage, and pump

Continued on page 24

a brand new PROFIT MAKING LINE of Commercial air-cooled split systems FOR YOU!

Air Conditioners

MODELS FROM 7½ TO 20 HP. MULTIPLES FOR HIGHER RATINGS

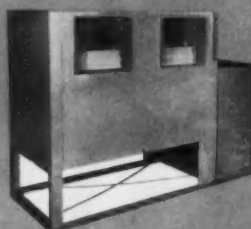


CONDENSING UNIT

Rugged • Quiet • Weatherproofed • Diagonal coil for minimum plan area • Controls wired and enclosed • Compressor section may be detached • Designed for outdoors.

Heat Pumps

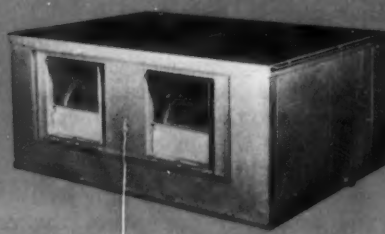
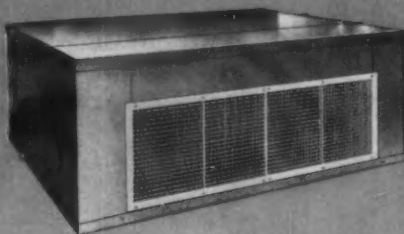
MODELS FROM 7½ TO 20 HP. MULTIPLES FOR HIGHER RATINGS



CONDENSING UNIT

High cfm., low sound level, blower type fans • High capacity coil • Greater flexibility in equipment location • Supplementary heaters if required.

Horizontal Air Handlers



Sizes to match Condensing Units • For remote installation with ducts or with plenum and 4-way grille as optional extra • Large coil face area for low air velocity and low sound level.

12 YEARS AND OVER A MILLION UNITS

of air conditioning and refrigeration systems have provided the experience behind this Commercial Line. Since 1949 our facilities have expanded each year to where we now have more than 230,000 square feet of manufacturing area. Addison's know how, experience and fully equipped plants are your assurance of quality products.

ADDISON

PRODUCTS COMPANY

ADDISON, MICHIGAN • PHONE LINCOLN 7-1200

circle 2 on reader service card

BOHN LO-AIRE ↓ ↓ ↓

COOLERS CHOSEN FOR MEAT DEPARTMENT OF EISNER STORE



Eisner Stores, Division of Jewel Tea Company, Inc., selected Bohn Lo-Aire Unit Coolers for this recently remodeled supermarket in downtown Champaign, Illinois. These economical, low air-flow refrigeration units now provide Eisner's meat-wrapping areas and cutting room with even temperatures, low enough to prevent weight loss and spoilage but high enough to insure acceptable working conditions. Eisner personnel especially appreciate the comfort resulting from the low air volume, very low air discharge velocity, and quiet operation of these units.

Bohn Lo-Aire Unit Coolers for temperature ranges above 34° are available in seven models from 4,000 to 26,600 BTU/HR at 10° T.D. For storage temperatures ranging from 28° to 34°, all seven models of the Lo-Aire are available with the Bohn-El automatic electric defrost system. For complete details, write for Bulletin 260 or call your Bohn Wholesaler.

BOHN

Buy the known line... the BOHN line
ALUMINUM & BRASS CORPORATION
Danville Division • Danville, Illinois

circle 17 on reader service card

Product DATA

Continued from page 22

inlet. For evacuation of airconditioning and refrigeration units, pumps them to pressures of 50 microns of mercury. Gas ballast pump prevents contamination of pump oil by water or refrigerant. Gage measures total absolute pressure directly, with overall range from 1 to 1000 microns. Pump inlet has 1/2" female pipe thread fitting.

circle 146 on reader service card

Combination ice flaker

Product: "FrigiDrink" combination drink dispenser and ice flaker (Models 27A, 27A-W).

Manufacturer: Freeze-King Corp., Chicago, Ill.

Features: Model 27A is 4-flavor dispenser mounted on 1/2 hp air-cooled 300-lb. capacity flaker; Model 27A-W is 4-



flavor dispenser mounted on 1/2 hp water-cooled 350-lb. capacity flaker. Also features shelf on back of flaker cabinet for four 2-gal. syrup tanks, 1/2 hp carbonator pump, ice storage bin holding up to 135 lb. flake ice and ice auger. Measures 34 x 26 x 38", including 5" adjustable leveling legs.

circle 147 on reader service card

Perishable food cooler

Product: Compact cooler unit for perishable foods that must be held at 30° F or higher and rapid defrosting not required.

Manufacturer: Recold Corp., Los Angeles, Calif.

Features: Maintains less than 1/2% of meat shrinkage in 35 x 180" cooler; is of minimum height for installation ease; has built-in motor thermal overload protection; and coil fins are spaced four to inch. Defrost by box air during time clock shutdown. For R-12, R-22 and ammonia in sizes to 34,600 Btu.

circle 148 on reader service card

Continued on page 77

BUY SPORLAN SOLENOID VALVES

for Peak Performance

on **ALL** air conditioning
and refrigeration
applications!



Buy Sporlan Products right
down the line . . . from your
friendly Sporlan Wholesaler.

will give you the best service

• **SPORLAN Solenoid Valves**

on your next
refrigerant liquid, hot
gas, or suction line
applications. Also water,
or steam installations.

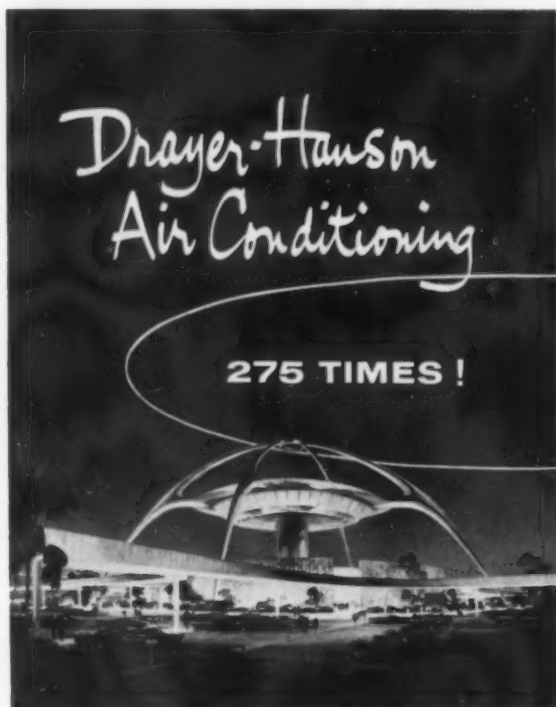
- SPORLAN Solenoid Valves are tight closing. The extensive use of synthetic seating material eliminates seat leakage.
- SPORLAN Solenoid Valves with their high MOPD ratings can be used for either Refrigerant 12 or 22.

THE NEW SPORLAN 180 Solenoid Pilot Control

- *used in place of large capacity solenoid valves*
- *much more economical*
- *one size only*
- *simultaneous control of one or more thermostatic expansion valves.*

Send for Bulletin 30-10 Today!

SPORLAN VALVE COMPANY
7525 SUSSEX AVENUE ST. LOUIS 17, MISSOURI
TV
EXPORT DEPT. 85 BROAD ST. NEW YORK 4, N. Y.
circle 67 on reader service card



Drayer-Hanson Air Conditioning

275 TIMES!

\$50 Million Dollar

NEW TERMINAL AND AIRFIELD FACILITIES

Los Angeles International Airport

**D-H's POPULAR "FZ" - "V" - "H" - "AM" and "HRC" UNITS!
NEW TERMINAL • TICKETING STRUCTURES • SATELLITE BOARDING**

For Los Angeles Dept. of Airports—Joint Venture Architects and Engineers: Charles Luckman Associates, Welton Becket Associates, Paul R. Williams. General Contractor: Robert E. McKee. Mechanical Engineer: J. S. Hamel, Engineer. A/C Contractor: Climate Conditioning Co., Div. Paul Hardeman, Inc. D-H Sales Agent: Air Conditioning Supply Co.

These Brochures tell you why: HRC 211.01,
CSHV 312.01, FZ 321.01 and EMG 5715.



drayer-hanson

DIVISION OF
HI-PRESS AIR CONDITIONING OF AMERICA, INC.
3301 Medford Street, Los Angeles 63, California
(Cable: Cliconi, Los Angeles)

circle 22 on reader service card

USEFUL Literature

COLOR CODING will help readers of 72-page Catalog 60-AC published by Air Controls Products, Inc., on its line of registers, grilles, diffusers, and sheet metal screws. By use of the color-coding, readers can systematically obtain data on any individual product in the entire line. Includes unit specs, capacities, selection charts, and list prices.

circle 206 on reader service card

NOISE PROBLEMS can be checked with "Silentflow" duct silencers is the claim of Bulletin B10, issued by Silence, Inc. Shows how to select circular duct silencers. Two tables on air-flow vs. pressure drop are given for two models of the silencers. A third table lists noise reduction values in decibels.

circle 207 on reader service card

THE U.S. ARMED FORCES, among others, are users of "tube-strut" clamps for storage racks, according to two bulletins issued on the product by Tube-Strut Corp. A 12-page brochure offers illustrations and text on uses, advantages, and typical applications. A 4-page bulletin gives specifications of types of the clamp, as well as photographs of its use on racks used to store a wide variety of products.

circle 208 on reader service card

ADVANCE BULLETIN C-460, published by Kramer Trenton Co., describes air-cooled condensing units. Two product photos illustrate the release. Tables of specifications, O.A. dimensions, nominal ratings and a parts list are included.

circle 209 on reader service card

NEW AND COMPREHENSIVE is a 32-page handbook published by Scovill Mfg. Co. It details the company's lines of copper tube, accompanied by technical and installation data. There are also guides to selection of correct sizes and types of tube and pipe, as well as soldering, brazing and flared joint information.

circle 210 on reader service card

STEAM HEATING COILS manufactured by the Sturtevant Div., Westinghouse Electric Corp., are featured in Catalog 1710. The 24-page release includes application information on blast heating coils, distributing tube heating coils, and dual feed distributing tube coils. Many photos, drawings, and construction details are featured, as well as piping diagrams and selection, performance, and installation procedures.

circle 211 on reader service card

AVAILABLE TO CONTRACTORS is Form E-150 on International Oil Burner Co.'s hot water electric baseboard heaters. Seven sketches, a photo, and two drawings are included, along with tables of ratings, sizes, and specs for both permanent and portable floor- or wall-mounted models.

circle 212 on reader service card

A 4-STEP GUIDE to help designers of cooling tower installations plan their pump and piping requirements has been published by Bell & Gossett Co. The manual contains diagrams and charts that illustrate the gpm capacities of two series of pumps. One table shows the total equivalent pipe footage for different pump pressure heads; a second shows the carrying capacities of various pipe sizes in gpm.

circle 213 on reader service card

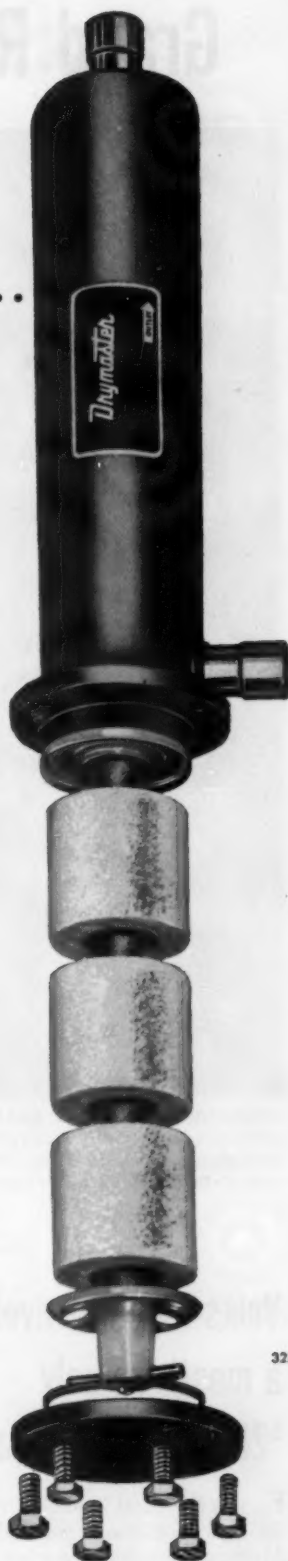
Continued on page 74

UNSURPASSED FILTERING AND DRYING with ADDED Convenience and Economy... It's the New Refillable Type *Drymaster*[®] Filter-Drier!

The superb, balanced filtering and drying performance of the new refillable type DRYMASTER comes from HI-FI Filter Block Desiccant: These fully activated, pressure molded briquettes quickly remove all harmful moisture, acid, sludge and micron-size foreign particles from the refrigeration system. HI-FI Filter Block Desiccant is non-dusting, non-channeling and is virtually unequalled in moisture adsorbing capacity. Its combination surface and internal depth filtering ability is unsurpassed by any other comparably sized drier in the field today.

And the new angle-type, refillable DRYMASTER Filter-Drier gives added convenience and economy, too. Once installed, the body shell of the Drier is in for the life of the system; only the desiccant is replaced. DRYMASTER Refillable Filter-Driers are designed for 5 ton through 165 ton capacities with 1/2" O.D. through 2 1/8" O.D. solder connections. End fittings are made of copper for easier soldering.

HI-FI Desiccant Briquettes, protected against shock by fibre glass padding, come packed in vacuum sealed cans ready to be installed quickly, easily, with no connections or joints to remake.



Write today for Catalog R-159 . . . contains complete information on all Streamline Refrigeration and Air-Conditioning products.

322



MUELLER BRASS CO.
PORT HURON 14, MICHIGAN

VAMPCO ALUMINUM PRODUCTS, LTD., STRATHROY, ONTARIO
Exclusive Canadian Representative for Mueller Brass Co.
Air Conditioning and Refrigeration Products

circle 52 on reader service card

Grand Rapids, Michigan, service man



SWALLOWS ¼ TON WITH EASE! This 500-lb. ice maker loads easily into Ed Van Der Kolk's Volkswagen Kombi Station Wagon through big, double side doors. The driver sits in the front; the engine's in the rear. Thus the load is balanced between the axles.

The Kombi combines the features of a station wagon and a panel truck. With two seats out, it's a cargo carrier with a 1,786 pound capacity. With seats in, it carries 9 people. Suggested retail price (East Coast Port of Entry) is \$2,095 (West Coast \$2,215).

**Volkswagens travel 1,000 miles
a month on only
\$20.50 worth of gasoline**

Ed Van Der Kolk, owner of the Air Conditioning and Refrigeration Maintenance Company, Grand Rapids, Michigan, decided to cut his truck servicing costs. So

he bought two Volkswagens—a Panel Truck and a Kombi Station Wagon.

Now, after 9 months, here's how he rates his two new "employees": "On every count, my Volkswagens are the trucks best suited to my needs. They can handle big units—like 500-lb. ice makers and bulky air conditioners—and still they're economical to run."

Mr. Van Der Kolk provided some pertinent statistics: "Our records show we run our Volkswagens 1,000 miles a month under all conditions, yet our gasoline cost per truck for nine months was only \$184.56. That's

does his own business a service

© 1961 Volkswagen of America, Inc.



PLENTY OF "HORN-TOOTING" ROOM! See how Mr. Van Der Kolk shrewdly uses his Kombi to "toot his own horn." Ample space below the windows on both sides of the VW Truck Station Wagon for bold display advertising. The special ladder racks Mr.

Van Der Kolk uses on the roof of his Kombi is one of the optional extras available through every Authorized Volkswagen Dealer. Note the sedan in the foreground; a great many VW Truck owners do their pleasure driving, too, behind the wheel of a Volkswagen.

\$20.50 a month. And we get 21 miles per gallon from each truck. We've used no oil so far; spent only \$60 a truck on service costs. Even compared with a truck I operated 10 years ago, when most things, including gasoline, cost a lot less, I found we're operating our Volkswagens at exactly *half the cost.*"

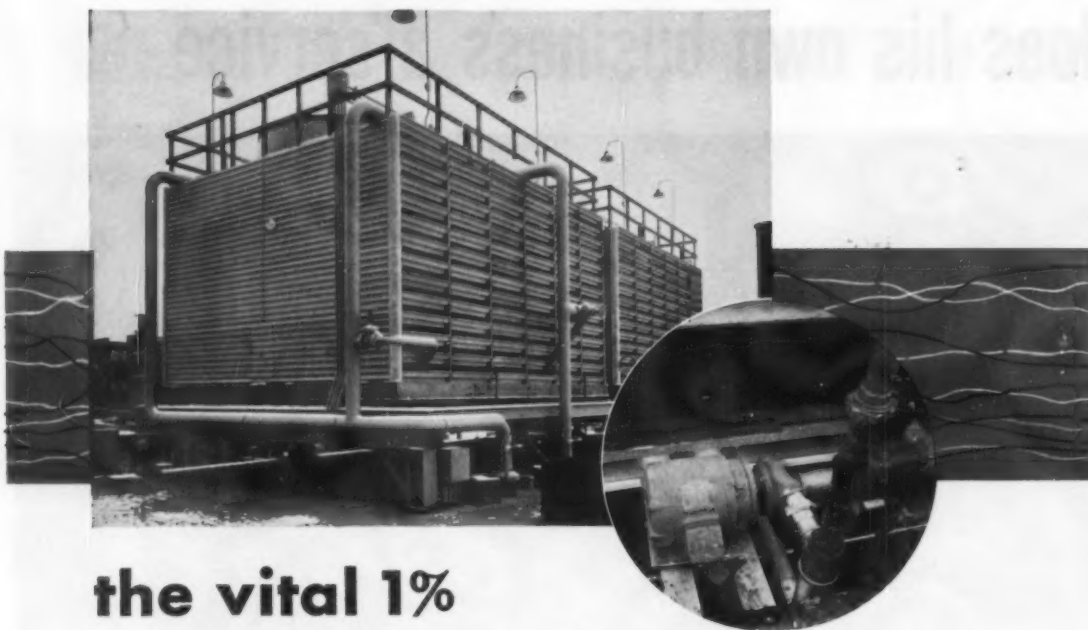
Ed Van Der Kolk's experience with Volkswagen is shared by the owners of 110,000 other Volkswagen trucks now in service throughout the U. S. Volkswagen is the advanced truck idea that's been proven on the road for the past 11 years.

Are you ready for a VW Truck? You are if you want a truck that costs less to buy, less to operate, and less to service. To help you make the right decision, talk to your Authorized VW Dealer soon. Ask for a demonstration. And get your free copy of the 60-page illustrated booklet—"The Owner's Viewpoint." It documents with facts and figures VW Truck performance and owner experience in a wide variety of businesses. It shows what *you* can expect to get from Volkswagen Trucks, too.



circle 82 on reader service card

THE REFRIGERATION & AIRCONDITIONING BUSINESS/MARCH 1961



the vital 1%

In an air conditioning installation, the pump seldom exceeds 1% of the total cost, but the importance of this 1% is obvious . . . if the pump breaks down, the entire system fails. The proven dependability and lower maintenance costs of Ingersoll-Rand Motorpumps are only two reasons why they are the leader for such important applications. I-R Motorpumps simplify installation because they are compact. They operate in any position and they are available in a wide range of types and sizes to meet any requirement.

over a century



of pump progress

from the leading manufacturer . . .

Ingersoll-Rand

81A9

11 Broadway, New York 4, N. Y.

"K" line Motorpumps for smaller installations are available 1/3 through 25 HP.



OTHER I-R PUMPS AVAILABLE



Self-priming pumps



Horizontally split pumps



Cradle mounted pumps

A MAJOR
BREAKTHROUGH
IN COOLING & HEATING

ARKLA'S
NEW 25-TON
GAS CHILLER-HEATER

Arkla's new 25-ton gas chiller-heater is a major breakthrough in cooling and heating technology. It is the first gas chiller-heater to be designed and built in the United States. It is a compact, efficient, and reliable unit that can be used in a wide variety of applications. It is designed to operate on natural gas or propane, and it can be used in both commercial and industrial settings. It is a true energy saver, and it is a true breakthrough in the field of cooling and heating.

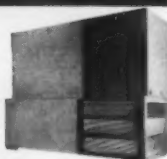
For more information, contact your local Arkla representative. Or, write to Arkla, Inc., P.O. Box 100, Tulsa, Oklahoma 74101. Arkla is a leader in the field of gas chiller-heaters, and it is proud to announce this new breakthrough. Arkla is a company that is committed to innovation and excellence, and it is always looking for ways to improve its products and services. This new gas chiller-heater is just one of the many ways in which Arkla is committed to providing the best possible solutions for its customers.

THE GAS  INDUSTRY ANNOUNCES...



A MAJOR BREAKTHROUGH IN COOLING & HEATING

ARKLA'S NEW 25-TON GAS CHILLER-HEATER



Here it is — the revolutionary new Arkla absorption unit that heats and cools without a steam producing boiler or converter. Gas-fired burners in the generator section energize the system for absorption cooling, or for heating. It's the perfect system for modern year 'round gas air conditioning.

INSTANTLY HEATS AND COOLS AUTOMATICALLY ◀ HEATS WATER WITHOUT A BOILER ◀ COOLS WATER WITHOUT A COMPRESSOR ◀ REQUIRES NO LUBRICATION ◀ SEALED FOR LIFE, REQUIRING MINIMUM MAINTENANCE ◀ MAINTAINS SAME CAPACITY FOR THE LIFE OF THE UNIT ◀ HAS NO MOVING PARTS IN THE HEATING AND COOLING CYCLE ◀ FIRST MEDIUM OR LARGE TONNAGE AIR CONDITIONER THAT HEATS.

Truly revolutionary...investigate for your next building project the new Arkla DF-3000 Gas-Fired All Year* Chiller-Heater.

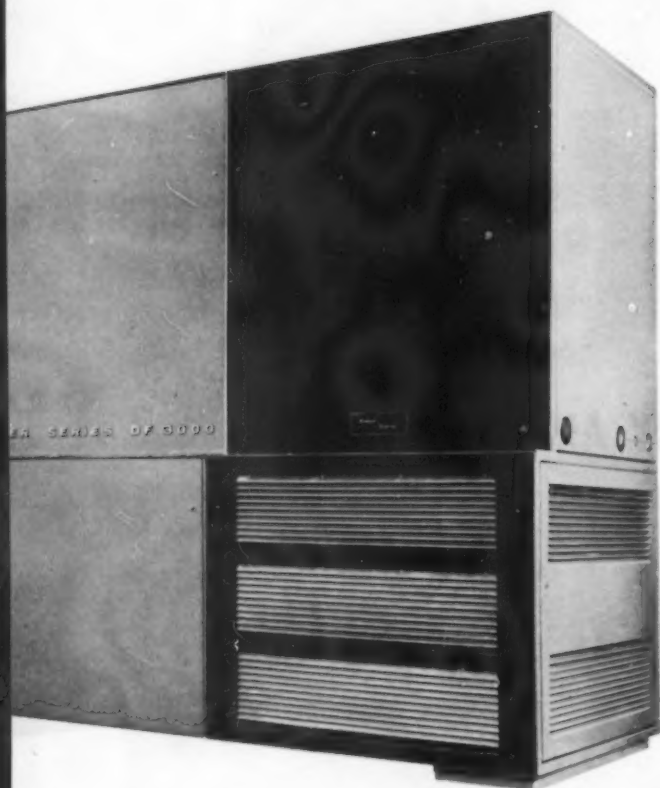
For details contact your local Gas Company. Or write Arkla Air Conditioning Corporation, 812 Main Street, Little Rock, Arkansas.

American Gas Association



**FOR HEATING & COOLING
GAS IS GOOD BUSINESS!**

circle 10 on reader service card



McQUAY heavy duty, air cooled Aircon condensers are constructed to give complete, dependable operation for either refrigeration or air conditioning—or both. They are available in horizontal or vertical air flow models in 19 sizes from 7½ to 100 tons nominal capacity in a single unit. Unlimited capacity is available in multiple unit installations. The low profile, quiet operation, flexibility and the economy in installation and operation make the McQuay Aircon ideal for every installation. The McQuay Seasoncontrol, available as an accessory, offers automatic head pressure control for use any time of the year, winter or summer. For complete information call your local McQuay representative, or write McQuay, Inc., 1643 Broadway Street N. E., Minneapolis 13, Minnesota.

McQUAY
Means Quality



for **AIR
CONDITIONING,
REFRIGERATION
OR BOTH**

19 SIZES • 7½ TO 100 TONS IN A SINGLE UNIT

McQuay INC.

AIR CONDITIONING • HEATING • REFRIGERATION

circle 47 on reader service card

THE REFRIGERATION & AIRCONDITIONING BUSINESS/MARCH 1963





for central
air-conditioning
installations,
there are—

3 BIG REASONS

you'll like EC&M starters!

They're easy to install Use either copper or aluminum power wiring—these starters have provisions for both. What's more, you can add pushbuttons, selector switches, pilot lights or extra electrical interlocks as needed in the field (see circled picture above). For maximum safety, these starters are equipped with 110-volt control circuits.

Your customers will like them They'll like the quiet-operating DC magnets, supplied by self-contained transformers and rectifiers. Thermal or magnetic relays provide positive overload protection, and heavy-duty, mill-type contactors are supplied at no extra cost—a real "plus" factor in dependability and long life.

You can get expert help locally Our Field Engineers in more than 100 offices can give you all the local service and selection help you need. They know the specifications of every air-conditioner manufacturer, and can match any system you install. They are up to date on local power company restrictions—always a big help when it comes to buying air-conditioning starters.

...

GET THE COMPLETE STORY on EC&M starters for large HP, low and high voltage air-conditioning units. Square D also offers NEMA Size 1 through 5 starters for auxiliary pumps, fans and small compressors. For details, write Square D Company, EC&M Division, 4500 Lee Road, Cleveland 28, Ohio.



SQUARE D COMPANY

EC&M DIVISION • CLEVELAND 28, OHIO

wherever electricity is distributed and controlled

circle 68 on reader service card

6126

ANSWERS TO COMMON WATER TREATMENT PROBLEMS

Water obtained from natural sources is not really pure. It contains foreign matter in varying forms and amounts. This may be present as suspended solids or solids and gases in solution. The conventional dividing line between soft and hard water is 200 ppm (parts per million) of these impurities—the higher the ppm, the harder the water.

It is these substances that cause scale buildup. In cooling with water, evaporation takes place, causing increasingly higher concentration of the impurities. Eventually the solid matter drops out as a sludge or deposits on the metal surfaces, forming scale.

How to identify problem scales

Prepare a dilute solution of solid or liquid scale remover in a glass jar or bottle (1 tsp. of solid scale remover per ½ pt.—1 tbsp. per ½ pt. of liquid). Chip small pieces of scale from the unit, drop them in the solution and observe the action.

Magnesium or Calcium Carbonate Scale

Usually of light color. Will bubble vigorously in the solution.

Iron Scale

Usually a brown or reddish color. Bubbles slightly or not at all. Turns solution to a yellowish color.

Oily Scale

Can be any color. Little visible action in solution, but an oily ring may appear on solution surface.

Sulfate and Silica Scale

Can be any color. Usually are extra hard and flinty. Little or no bubbling in solution. Scale of high silica content may have a glossy surface.

HOW TO REMOVE THEM

Magnesium or

Calcium Carbonate Scale

Can be easily removed with either liquid or solid scale remover.

Iron Scale

Requires liquid scale remover. Use 4 gal. per 15 gal. of sump water. Stop fan to let water temperature rise to 100-110°F but not over 120°F. Clean at this temperature for best results. About 4 hr. needed.

Oily Scale

First add 1 box of Dash detergent per 100 gal. of system water. Run 15-20 min. Be sure foaming is not excessive. Leave the Dash in the solution and add recommended dosage of solid (5 lb. per 10 gal. of water) or liquid (1 gal. per 15 gal. of water) scale remover.

Sulfate Scale

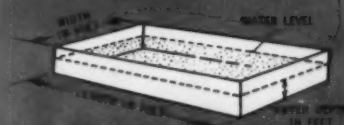
Add 1 lb. of baking soda per gallon of sump water. Circulate for 8-12 hr. Then drain, rinse and refill system. Add liquid scale remover—4 gal. per 15 gal. of water. Circulate 2-4 hr., using test papers regularly to check cleaning strength.

NOTE: If any of these treatments fails, a second attempt should be made. A second failure would indicate the scale can be removed only by harsh chemical treatment or mechanical means.



"Virginia" Scale & Corrosion Inhibitor. Glassy polyphosphate crystals provide slow, controlled solubility. No mechanical feeding devices are needed. Inhibitor holds scale-forming solids in suspension or solution. Deposits thin protective film on metal to stop oxidation. Has neutralizing effect on weak acids.

HOW TO CALCULATE AMOUNT OF WATER IN A SYSTEM

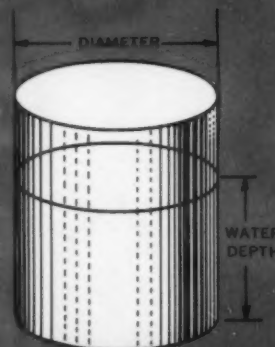


RECTANGULAR TANK OR SUMP

Measure (in feet) the length, width and water depth. Then length x width x water depth x 7.5 equals gallons of water.

EXAMPLE: If sump is 5 ft. long, 4 ft. wide, and water is .5 ft. deep, the calculation is as follows:

$$5 \times 4 \times .5 \times 7.5 = 75 \text{ gal.}$$



ROUND TANK

Measure diameter of tank and depth of water in feet. Then diameter squared x water depth x .6 equals gallons of water.

EXAMPLE: Tank has diameter of 3 ft. and water is 3 ft. deep.

$$9 \times 3 \times .6 = 162 \text{ gal.}$$

**FOR TROUBLE-FREE
MAINTENANCE USE**

"VIRGINIA" REFRIGERATION PRODUCTS



"Virginia" Scale & Corrosion Inhibitor
Reduces scale buildup sharply, keeping scale-forming solids in suspension or solution. Less scale, less labor, lower maintenance costs.



"Virginia" Liquid Scale Remover
Ideal for heavy scale. Dissolves 3 lb. of scale per gal. Works fast. Inhibited to prevent metal damage. (Anti-foam agent and test papers included with every container.) Light shatterproof throwaway container for easy handling and easy pouring.



"Virginia" Solid Scale Remover
Highly inhibited—safe for use on galvanized, dipped zinc and aluminum water-cooled equipment. Destroys algal growth. Contains 96% sulfamic acid.



"Virginia" Algae-Cides
Adaptable to the special use requirements in (1) towers, (2) evaps, (3) air washers, and (4) ice machines and drip pans. A new No. 4 high-potency formula kills the tough resistant types of algae.

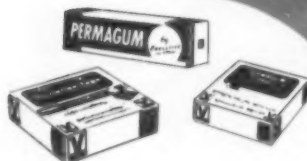


Du Pont FREON® Refrigerants
Nonflammable, nontoxic, stable, odorless. Best known for premium quality. Most widely used refrigerants in the industry. "Virginia" is the only national sales agent for Du Pont "Freon". F-11,* F-12,* F-13,* F-22,* F-113* and F-114* are available in cylinders of all popular sizes.

*Du Pont registered trade mark



"Virginia" Ice Machine Cleaner
Eliminates slow freezing, bad taste and odor. Will not injure enamel or polished metal surfaces. Highly effective on automatic cube or flake ice machines.



Presstite Insulation
Tape—ideal for stopping pipe drip. Adheres to any dry surface. **Permagum slugs**—seals seams, copper tube, BX and conduit entries against moisture. **Cords**—nonstaining, odorless, shaped for use on display cases, freezers, room coolers, etc.



VascoCel Insulation
Preformed of soft, durable, clean, odorless Neoprene. Cuts time and labor costs sharply. Closed-cell structure makes condensation impossible. Ozone, oil, acid, and fungus resistant. Application temperature range 0-220°F. Available in 3/8", 1/2" and 3/4" wall thickness.



"Virginia" Degreasing Solvent
No. 10 has low toxicity, is noncorrosive and fast drying. High flashpoint of 154-160°F reduces fire hazard; dielectric strength 20,000 volts. Ask about "Virginia" "Freon 11" Cleaning Solvent for motor burnouts.



"Suniso" Refrigeration Oils
G Oils are improved for greater stability and lower waxing point. Available in 3G-150 SSU, 4G-300 SSU, and 5G-500 SSU. Dual Inhibited oils have same low wax point, resist breakdown and copper-plating even more effectively.



Can-O-Gas® Packaged Refrigerants
Throwaway cans—full line in screw-top or clip-top cans. Wide variety of pre-weighed charges, accurate to ± 4 grams. Selection of Freon® gases, sulfur dioxide, and methyl chloride.

Carried by wholesalers everywhere. Order from one nearest you or contact Refrigeration Division, VIRGINIA SMELTING COMPANY, West Norfolk, Va.
Available in Canada and many other countries

"Virginia" is the only national sales agent and authorized repacker for Du Pont's "Freon" Refrigerants.



Another good reason it pays to sell SCOTSMAN!

This lineup of new Scotsman Ice Machines is undergoing a rigid test run at Scotsman's big plant in Albert Lea, Minnesota. Hour after hour, these Scotsman machines produce hundreds of pounds of ice. During this test, every working part is checked and rechecked to see that every unit is in perfect working order.

Then—and only then—are the Scotsman machines shipped out to the dealer and on to the customer!

This careful attention to the production

of Scotsman Ice Machines is only the first link in the chain of Scotsman service. Scotsman backs up its top quality machines with a sales and service group second to none in the industry. And to help you sell Scotsman Ice Machines, a giant advertising and merchandising program promotes faster sales and bigger sales to more and more markets!

Do you qualify for the Scotsman franchise so highly prized in the ice machine industry? Mail in the coupon today and get full information.



YES! Send me complete information about a franchisee for Scotsman Ice Machines.

NAME

ADDRESS

CITY ZONE STATE

MAIL TO: **SCOTSMAN ICE MACHINES**
Queen Products Division of King-Seeley Corporation
193 Front Street, Albert Lea, Minnesota
EXPORT OFFICE: 15 William St., New York, N.Y.

New designs!

Honeywell now offers a complete selection of panels for 2 to 7½ ton air conditioning systems!

You get the latest improvements in panel design, planned to meet your equipment needs, yet avoid costly engineering and production problems. You cut down on installation time and profit-losing service call-backs because all components and electrical circuits have been standardized and simplified. You

simplify ordering, stocking and inventory with single-source responsibility. And you sell *the most complete line* backed by the best name in the business. Call your nearby Honeywell office for details. Or write Honeywell, Dept. RS-3-82, Minneapolis 8, Minn. In Canada, write Honeywell Controls, Limited, Toronto 17, Ont.



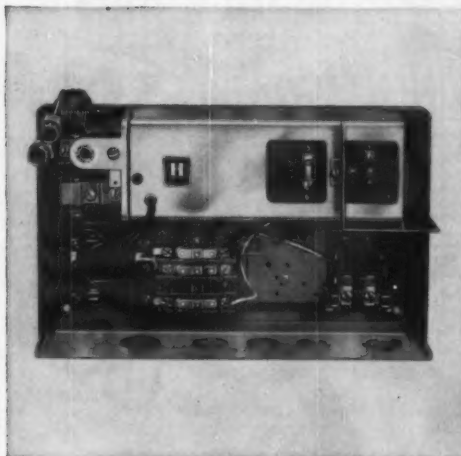
PROVED R8100 series panels incorporate all components necessary to control 2 and 3 ton air conditioning systems in one compact unit! The transformer, a single or two-speed fan relay and an 18 or 25 amp contactor are all mounted on a single subpanel. Models are available with time delay, remote reset,



and heat pump changeover relays. The same panel can be used for self-contained and split systems. Manufacturers can mount and pre-wire the system at the factory, simplifying dealer and distributor inventory and easing replacement problems. With the indoor fan-center panel eliminated, installation time is cut.

circle 50 on reader service card

Proved performance!



NEW R8200 series panels for 4, 5 and 7½ ton systems combine proven features of the R8100 series with new improvements! These new all-in-one control panels for self contained or remote air conditioning units and heat pumps include UL approvable rainproof enclosures for both the control center and



high side panels. Provisions are made for the easy addition of auto-recycling overloads—used with remote reset impedance relay systems. New Class 1 terminals, for tying in a 24 or line voltage compressor protection system, are standard. And models are available with a 14 ampere, 120 volt fan relay rating.

Honeywell

HONEYWELL INTERNATIONAL
Sales and service offices in all principal cities of the world. Manufacturing in the United States, United Kingdom, Canada, Netherlands, Germany, France, Japan.



First in Control
SINCE 1885

Select from Honeywell's complete line of heating-cooling thermostats



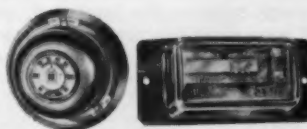
New T87 Honeywell Round—the world's most popular heating-cooling thermostat.



New T870 Deluxe Thermostat controls single or two-stage heating-cooling systems.

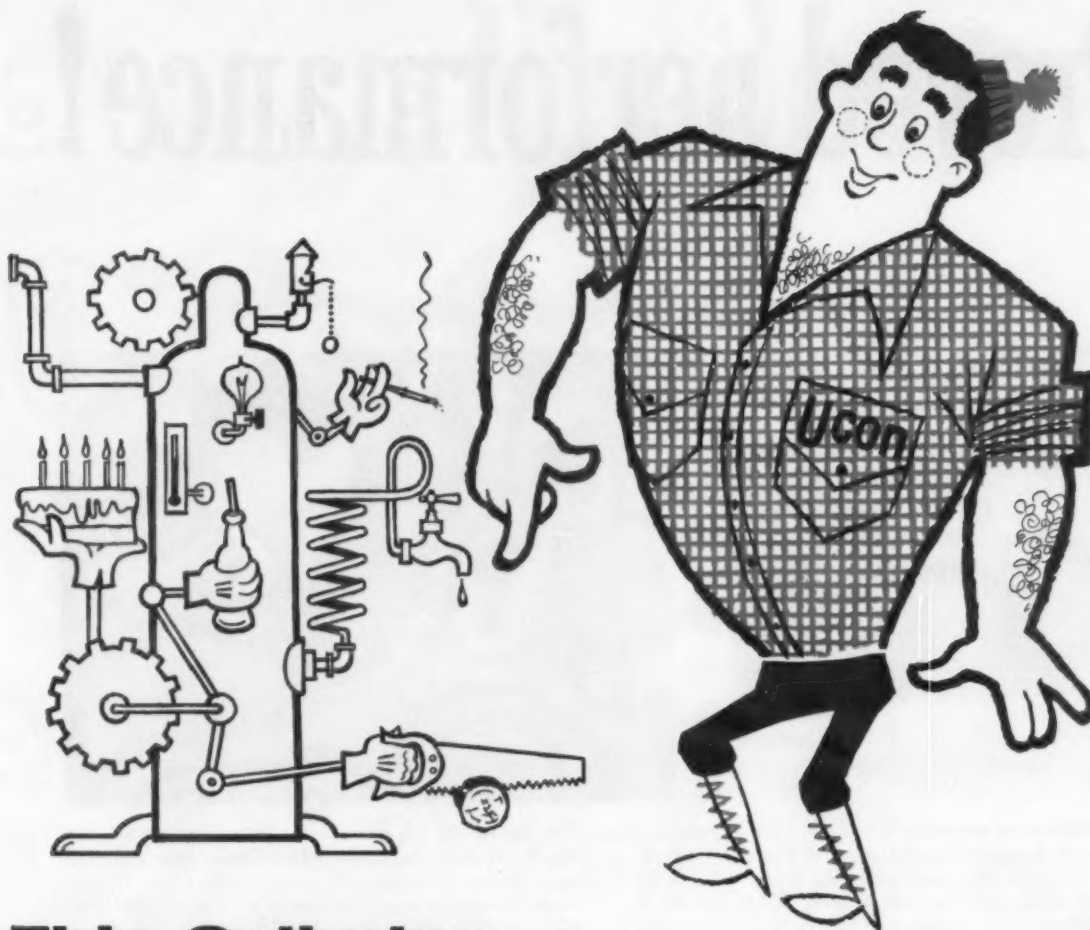


New Weather Station* Control Panel assures the ultimate in heating and cooling comfort.



New Y379C Indoor-Outdoor Heating Cooling Control System provides an early warning of changing outdoor weather conditions and automatically adjusts the indoor thermostat to compensate for it.

*Trademark



This Cylinder Does Everything...

... stands right side up, upside down, discharges top, bottom and middle, carries itself, heats soup, grinds nuts, and transports you to and from the customer via a detachable propulsion system. Available in 27 sizes, it's the perfect answer to your every oddball requirement.

But for every day THESE THREE WILL SUFFICE...

Make no mistake about it—by SUFFICE, we mean cover the ball park. In one . . . two . . . three Ucon® Refrigerant Cylinders you'll find every important packaging convenience, every cylinder size you need, and—you can always be sure your wholesaler will have what you need, *when you need it*. Helpful technical assistance, too, is yours for the asking with UCON Refrigerants. Conclusion:



*For the most compact and convenient line of refrigerants—
See Your Ucon Refrigerants Wholesaler*



Ucon Refrigerants are manufactured by
UNION CARBIDE CHEMICALS COMPANY— Division of Union Carbide Corporation
270 Park Avenue, New York 17, N. Y.

Exclusive Sales Agent to Air Conditioning and Refrigeration Wholesalers
ANSUL CHEMICAL COMPANY, Marinette, Wisconsin

Ucon and UNION CARBIDE are registered trade marks of Union Carbide Corporation

circle 77 on reader service card

LET'S TALK

Business

Do your part to make the sixties soar

Have the Soaring Sixties materialized for you—or are you sitting back and complaining? This decade was supposed to be one of unparalleled prosperity according to the economists, who foresaw periods of adjustment and mild recession, but nothing significant to halt the boom, boom, boom of the Fabulous Fifties.

1960—what happened? Business did not lay golden eggs indiscriminately. Quite the contrary. In the light of glowing forecasts, based on population growth, many felt business just laid an egg. In many industries the cost-price squeeze reduced profits.

The reaction. Some sat tight, doing nothing. Others watched apprehensively. Everyone was concerned.

But over what? Let's take a hard look at "recession" 1960 and compare it with the "boom" year of 1956. Gross national product in 1960 was up 20% over 1956. National income was up nearly 20%. Retail sales up 16%. Production up 8%. Disposable personal income up 22% and personal savings up 27%. Here are the U.S. Department of Commerce figures, expressed in billions of dollars:

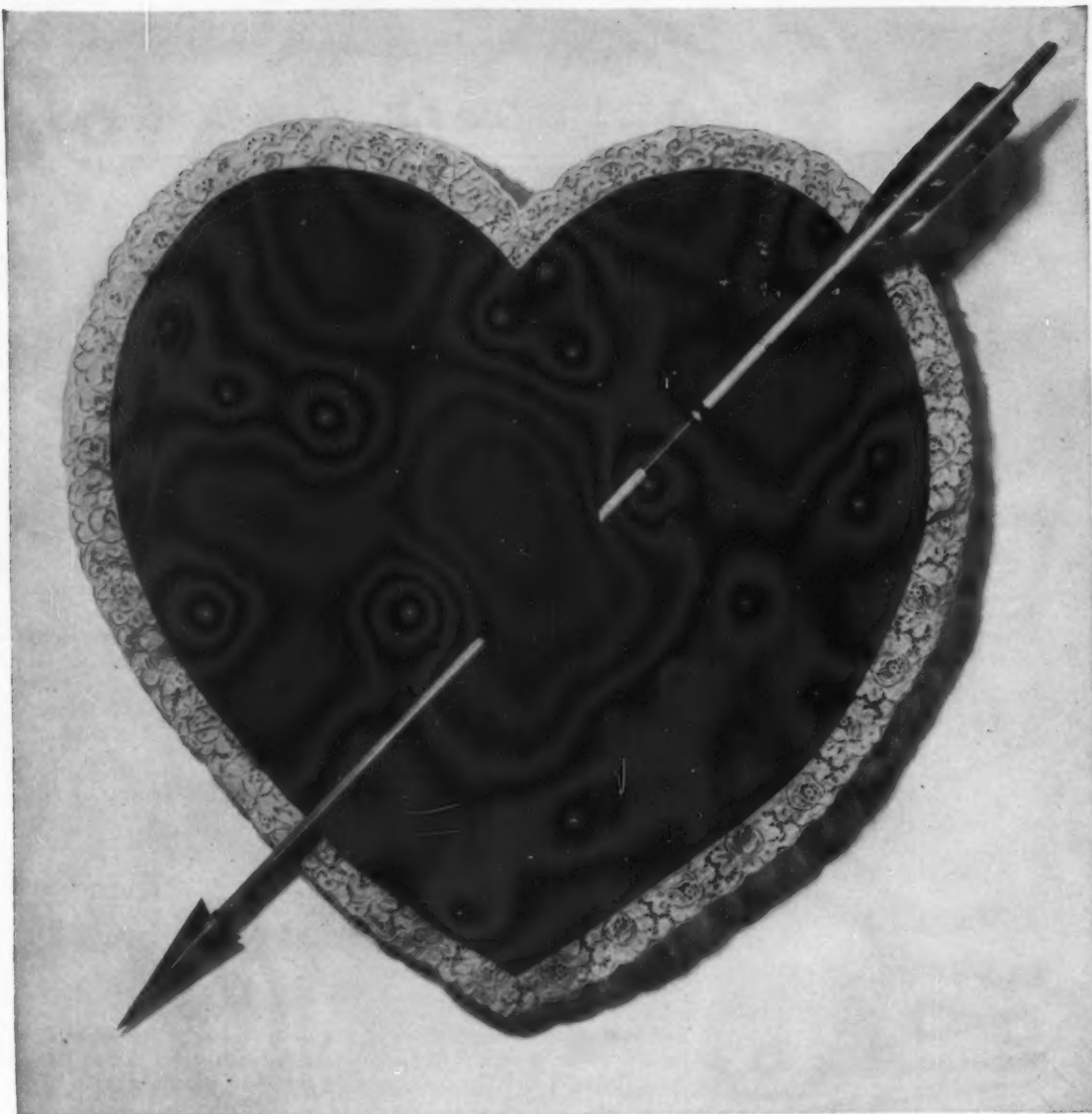
	1956 (adjusted to current \$)	1960 (latest figures available)
Gross national product	\$419.2	\$503.5
National income	350.8	419.4
Retail sales	189.7	220.0
Disposable personal income	292.9	357.5
Personal savings	23.0	29.0
Industrial production index (1957=100)	99	107

Do these figures show 1960 as a year of recession or one of solid, if unspectacular, progress? Our own industry recorded an overall 10% increase in 1960 and this was exceeded by even greater growth of a few product classifications.

Do it now. You can't afford to wait. Profits at the contractor-dealer level are not satisfactory—but they never have been. Saturation in this industry remains under 10% and spells opportunity for the contractor-dealer who goes after it. Your business practices must be improved through better cost knowledge and by using all the tools and equipment that are now available that can help you cut your costs. Your sales, promotional and merchandising efforts must be increased and made more effective.

Get the facts. We are faced with a temporary national unemployment problem that cannot be ignored but let's not tell each other that business has gone to hell in a handbasket, then bow our heads in defeat. Let's look the facts in the face. And for our own sakes, let's keep the facts straight—and act now.

Jack Robinson



WILL YOUR CUSTOMERS STILL LOVE YOU IN 1966?

Five years from now, will your air conditioning customers still be as satisfied with the equipment you're selling today? Or will they be disillusioned by poor performance and the high cost of operation and maintenance?

There's one sure way to keep your customers' affection—and keep your own cost of servicing low—and that's to install quality equipment . . . Chrysler equipment.

You can't put a price tag now on the extra value Chrysler's 25 years of air conditioning experience adds to every unit. But you can see the quality engineering features standard on Chrysler equipment for which your customers normally pay extra. And in 1966, you'll be able to compute the money you've saved on service calls . . . and count the Chrysler compressors that didn't fail.

One more question to ask yourself: Will the manufacturer of your present line even be in business five

years from now to supply parts and servicing? You know Chrysler will!

You owe it to your future profits, and your customers' confidence, to get the full story on Chrysler air conditioning and furnaces. Call your local Chrysler Distributor . . . today!



Chrysler Corporation, Airtemp Division, Dept. FK-31, Dayton 4, Ohio

circle 19 on reader service card

MARCH 1963/THE REFRIGERATION & AIRCONDITIONING BUSINESS

Is contract service the answer . . .

... FOR THE CONTRACTOR?
... FOR THE CUSTOMER?

RON HENRY, *associate editor*

CONTRACT SERVICE is the answer only if contractor and customer want it to be—and if both do everything they can to make it work. Offering a service contract doesn't assure the contractor of instant success any more than signing one assures the customer of equipment that won't break down.

So contract service is far from being an unmixed blessing. Properly cared for by both contractor and customer, it can mean money for both parties. If it is neglected, it can be pure murder.

Like the little girl with the curl in the middle of her forehead: "When she was good, she was very, very good. And when she was bad, she was horrid." Substitute "contract service" for "she" and you get the picture.

This accounts for the different stories refrigeration and airconditioning contractors told me during my investigation of this controversial subject. Those offering contract service and profiting by it, love it. Those not offering it can't see why anyone in his right mind would want to do it.

Why such a difference of opinion? Do some contractors have supernatural powers? Hardly. So why doesn't everyone jump aboard the contract service bandwagon if it's so profitable?

The answer is within yourself and your organiza-

tion. If you aren't already service-minded, you probably don't have the time, help, or inclination to change.

But if you are service-minded and want to set up a contract service program, you probably are asking how to go about it. You would make your first mistake by plunging blindly into it. Then each succeeding blunder would compound your error until one day you could stop worrying. You would have already posted a bankruptcy notice and would be out looking for a new way to earn a living.

So the best place for you to start to build a solid foundation for contract service work is to examine the success stories of those refrigeration and airconditioning contractors who are knee-deep in profits.

What is contract service?

Contract service is that service contracted for a customer from a refrigeration and airconditioning contractor. For a fee, the company agrees to perform certain work as specified in writing. This form has many names—service-maintenance agreement; maintenance (or) service agreement (or) contract.

There are two types. Full coverage sets one fee for

Continued on page 44

all labor, parts, and materials for a certain length of time, usually a year. In addition to replacing worn or defective parts, the contractor agrees to inspect the equipment several times a year.

Another type of contract covers only labor, with the customer paying extra for parts and materials. Full coverage is most popular. Some contractors don't even offer the second kind.

Then there's the preventive maintenance plan. The customer pays a flat rate per month or quarter for a set amount of work to be performed on his equipment. He pays extra for any other service required, often at a reduced rate.

Theories behind contract service

Customers are eager to wash their hands of taking care of equipment. They are willing to pay for guarantees against loss of business. That's why they buy service contracts.

The contractor benefits, too, by providing this service. Service contracts enable the contractor to do these things:

- Better plan inventories and manpower requirements.
- Provide year-round work for servicemen, who can do preventive work during slow times.
- Impress customers by offering fast service, individual attention, and budget terms.

THE CUSTOMER:

... his end of the bargain

Aside from paying his bills on time, what must the customer do to hold up his end of the contract service agreement? A good contract-service customer should do these things:

- ▶ Have repairs made promptly for damage not covered by contract. Any extra labor costs connected with these repairs should be paid by customer.
- ▶ Accept judgment of contractor about best way to handle a job.
- ▶ Permit servicemen to use common building maintenance tools.
- ▶ Permit only servicemen from the contractor to work on contracted equipment.
- ▶ Promptly notify contractor of any unusual operating conditions.
- ▶ Operate equipment according to contractor's instructions.

THE CUSTOMER:

"... worth every cent it costs"

Here's a typical customer reaction to contract service. I talked to the president of a catering service specializing in in-plant feeding. Here's what he told me:

"We have all of our clients' refrigeration and airconditioning equipment under contract. It's worth every cent it costs. We get fast service and the equipment is kept in fine working order. We pay all costs and carry it as part of our business operation.

"Our job is to provide food for cafeterias in plants—refrigeration is the key to food preservation. The same for airconditioning—it's the key to employee comfort. So we cover cooling equipment, too. Our policy covers all parts, but no labor."

• Be sure of a set amount of money coming in each year.

• Forecast a year's business by the amount of signed contracts.

• Maintain a close hold on the customer because he's obligated to call you for service. This is the most important value of contracts to the contractor.

As one contractor told me, "Contract service is more profitable than straight service itself, if handled properly. Without it, you are completely at the customer's mercy to call you."

What about the cost? One contractor emphasized, "You've got to get the customer to overlook it. You must make him realize what would happen if his business was interrupted. He must realize that no cost is too great if it ensures him of being able to open his doors the next day."

Another contractor told me, "Don't worry too much about charging a high fee. If you are doing a good job, you won't lose customers. You must make the customers like you. Do everything you can to show him just how important he is to you. I try to send the same man to service one job, but, at the same time, I try to get all of my men familiar with all of our accounts."

Is contract service necessary? "Yes," says the vice president of one of the nation's largest refrigeration and airconditioning contracting firms. "But it must be built on quality, not fancy pricing and gimmicks that fool the customer. We must realize that the need for contract service has grown out of poor service."

Other contractors feel contract service work is just a necessary evil. They told me, "We could make more money if we could be sure of the same customers without some kind of binding service program. But we can't, so we have to look beyond our contract losses to possible replacement sales. It's tough to do this when you are losing heavily on a few accounts."

Do contractors screen service contract prospects? Some do, some don't. Here's what one service manager told me. "I don't take everyone that comes along. I visit each place first. I see how the equipment has been kept and see if it's in good shape. Is the surrounding area neat? I talk to the owner, then investigate his credit. If he passes my test, I'll send a serviceman to thoroughly check the equipment. We're not big enough to take any account that looks like trouble."

Others ask only to be allowed to put equipment in good running order, at regular rates, before starting a contract. Still others take everyone with every type of equipment imaginable. These businesses are built on volume, and that's where the problem of pricing becomes so important.

How much to charge

There are two ways to price service contracts—wisely and foolishly. A foolish contractor gives equipment a cursory glance; promises to keep it running till the end of time; closes his eyes, and conjures up a price; cuts the price in half, and then gives a discount if the customer pays cash.

There aren't many foolish contractors still in the contract service business. It's hard to dispatch a service truck from the poorhouse.

The wise contractor first settles on a starting price. He reaches it by considering the facts. Then he adds to the starting price anything that complicates the job. He bases his prices on experience and an extensive array of tables and charts, not on fantasy.

What are these factors?

There's a table of base factors for both refrigeration and airconditioning equipment on this page. Each contractor has his own charges for equipment in various conditions. So let's examine some different theories that go into making these decisions.

● **Refrigeration charges:** If equipment is more than 1 hp, there's usually a premium charge for the compressor. If the condenser in a water-cooled unit is too old, most contractors won't cover it at all.

Normally three inspections are scheduled each year for cleaning up the equipment, lubricating it, and testing for leaks. "This is our insurance," the average contractor will say, "because it helps prevent major breakdowns. The inspections more than pay for themselves because we don't have to replace much expensive equipment."

One contractor offered these tips: It costs more to service icemakers and iceflakers than reach-in refrigerators. Automatic defrost cabinets are expensive because of the extra controls involved. Most refrigeration calls are at night, so you have to allow for that in estimating labor costs.

● **Airconditioning charges:** One base factor is horsepower. One contractor argues that it's not a valid factor. He insists it takes a serviceman the same time to repair a unit, whatever the horsepower.

All airconditioning service contracts call for a spring startup, midseason checkup, and fall shutdown.

Continued on page 46

Your price estimating guide

REFRIGERATION

A—Base Factors

Horsepower	Metering devices
Remote or self-contained	Type of refrigerant
Accessible or non-accessible hermetic	Any constant pressure valves
Age of condenser	Blower fan motor

AIRCONDITIONING

B—Base Factors

Age of unit when placed under contract	Remote or self-contained
Horsepower	Location of unit
Complexity of system	Application of unit

C—Plus

Number of scheduled inspections (multiplied by hourly labor costs)
Number of inspections for cooling only or for year-round units (estimated)
Number of hours of emergency service (multiplied by hourly labor costs)

D—Charge Extra For

Zones or extra equipment	Water tower or evaporative condenser
Extra valves or coils	Condensate pump
Filter changes in excess of specified number	Steam coil
Refrigerant in excess of specified amount	Overtime service
Water treatment service	Cleaning of heating or cooling coils

E—Don't Cover

Furnace, boiler or equipment jackets, hardware, decorative casing or cabinets
Boiler settings, combustion chambers, heat exchangers
Ductwork, insulation or cleaning and/or repair of either
Service calls resulting from clogged filters, low water pressure, low voltage, or blown main fuses
Work due to enforcements of local codes, building or union regulations
Dampers and regulating devices
Painting, except for protection
Water supply lines, drain lines and steam lines beyond apparatus valves
Electrical lines and equipment beyond apparatus main switches
Air actuated controls, recording controls and time controls
Repairs due to freezing or from contaminated or corrosive water
Service calls resulting from inadequate wiring

PRECISE RECORD KEEPING gives you quick access to service contract information. Call takers (at right) need only to turn around for a complete data folder on every service contract customer.



FACTORS FOR PRICING are discussed in this company by the service manager and service supervisor as they get together to set a price for a prospective contract customer. For a complete breakdown of these factors, see list on page 45.

In figuring a price, most contractors consider every item listed under B on page 45. Then, according to the equipment, contractors set a number of inspections or hours of service for items under C. They either add charges for items under D to the contract at a premium rate or they ask for cash payments at regular service rates when they crop up.

Overtime service is almost always a sore point. Some contractors charge the customer the extra half of the time-and-a-half hourly rate; others include a flat premium rate for overtime; still others (see story on page 49) don't charge anything for it.

As one contractor confessed to me, "I've never charged for overtime. It's killing me, but I'm afraid to start charging or I'll lose accounts to those contractors who don't charge." Common practice seems to be just charging the extra half time.

When you set up your schedule of prices based on age of equipment, you'll be giving the lower rates to the customer who signs a contract when his units are just out of warranty. Don't be misled and figure he's not paying enough. If you take proper care of his equipment, you'll still make money.

Another tip: One contractor figures that labor accounts for 75% of his service costs. Materials account for the balance. So figure accordingly.

Here are two tips to remember when you've finally arrived at a price:

(1) Consider your price in the light of how much the customer will pay, and

(2) You will tend to estimate high because you'll be subconsciously throwing in a safety factor. This comes from remembering only your large service bills, not those of customers who required little or no service.

What about obsolete equipment?

How do contractors handle replacement of equipment that can't be fixed because the equipment or parts are no longer manufactured? Most contractors offer the customer modern equipment at a reduced rate. If the customer won't cooperate, the contract is terminated.

Why the reduced rate? "To hold the business," I was told.

Controlling your contract service

Once you've set your price and your program is rolling into high gear, you still can't relax. If you don't carefully control your system, you're still heading for trouble. You must perform preventive maintenance on your service contract records.

Keep precise records for every service contract account. Be sure to adjust the base price each year for (1) age of the equipment and (2) changes in labor costs.

Review each contract before it expires. One contractor said he uses the wholesale price index for

ALL NECESSARY INFORMATION for controlling costs is on one card at Systems Engineering Corp., Chicago, Ill. There's a complete list of equipment, as well as an

up-to-date rundown on money spent for, or charged against, this service contract account. Charges covered by the contract are entered in different color ink than other costs.

#1

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SUB CONTRACTORS SERVICE RECORD SERVICE CONTRACT INFORMATION

metal and metal products to figure any increase in material costs. This index is available from the U.S. Department of Labor.

Study your files and work orders to find how much each contract has cost you and why. If your price was too low, it won't take you very long to find this out.

Find out why you aren't making money on a specific account. Perhaps the customer is just fussy and calls a serviceman at the slightest provocation. Maybe it's poor service work. Perhaps the equipment is not designed properly. Maybe the equipment is inadequate or the wiring bad.

After you've found the cure, drop the account if the customer won't go along. You'll be way ahead.

Some firms don't wait until year-end to examine contract accounts. One contractor uses this system; If there are three calls on one piece of equipment within 90 days, the card for this account is turned over to a supervisor for study. If equipment needs replacing, they replace it. The theory is that it is cheaper to replace than to make repeated, and costly, service calls.

This is borne out by one contractor's statement to me that 70% of all service call costs are for labor; only 30% for materials.

Another contractor told me he guarantees his men 32 hours of work every week. "I have to pay them for 32 hours even if they don't work. To avoid this, I use any spare time they have to make extra inspections on troublesome equipment," he told me.

Who in the company should examine records for contract accounts? It depends on the contractor. If the business is big enough, it warrants a fulltime man; if not, then the service manager usually handles it.

Dodge these pitfalls

Patch work—Serviceman makes repeated calls for one piece of equipment. He never really fixes it completely, only keeps it going another few weeks. Result? Serviceman is assured of a steady income; labor costs rise sharply for contractor.

Continued on page 48

Wasted time—Serviceman spends 75 minutes working; 45 minutes talking to customer. Result? Two hours of labor charged against this contract account. Customer doesn't care; he's not paying for the time. Serviceman doesn't care; he gets paid for whatever time he spends.

Free service—Serviceman spends 75 minutes fixing unit under contract. Spends additional 45 minutes tinkering with a unit not under contract. Result? Serviceman just adds this time to contract call; customer avoids regular service call.

Moonlighting—Serviceman uses 10 pounds of gas on contract job and charges contractor for 20. Result? Contractor's costs rise; serviceman has 10 pounds of gas to use while moonlighting.

Taking customer for granted—You've got this guy on a string, so you don't give the preferred service you promised. It's a good way to ruin your business.

Remember this—you must, above all, train yourself to be customer conscious.

How do you avoid these pitfalls? Maintain diligent watch over your servicemen; make frequent field inspections; spot check recent service reports to see if the work was actually performed in the amount of time turned in. Only by establishing a tight control over all phases of service contract work can the contractor make this program pay off in profits.

How to build your contract business

One of your best sources for new service contracts is your servicemen's contact with regular customers. So why not pay him for leads? One contractor gives servicemen a 10% commission for the original lead, then rewards him with 5% a year on renewal with no further work required of the serviceman.

Other sources: recommendations from other customers; warranty information; outright solicitation of new business. ♦



Contract Service

"No service contracts for me!"

"AS LONG AS the thing is working, leave it alone." That's one contractor's theory. He told me he wouldn't write a service contract even for equipment sold under his own guarantee.

"I used to offer contracts," he said, "but I never wanted to build up the service end of my business to the volume I would need to make money. My business is selling merchandise, so I'd be going against my own policy by selling service contracts. We service what we sell, that's all. If someone else's equipment breaks down, I'll be glad to replace it, not fix it. That's my policy in a nutshell."

Seems heartless, doesn't it? But, he thinks his experiences with service contract customers justifies his position. He tells it this way:

"I found that when I offered unlimited free service, the customer ignored the equipment. The day after my men inspected, I'd get a call from the customer saying something is wrong. 'It worked fine until your man started messing around with it' he'd say. So we

would send another man out, often to find nothing seriously wrong.

"We found that men were charging out parts for contract accounts and then not installing them. Servicemen also tend to spend more time on a contract account and get less done."

Since dropping contract service work, he's found that each customer averages about two calls a year. That costs them considerably less than paying for four inspections in 12 months.

"The union priced me right out of the service business," he said. "Now I have to turn down calls for weekend and holiday service work because I can't make money sending out a man and charging time-and-a-half and double-time. I often ask the customer if he can't wait until Monday or refer him to an independent service company."

"It really hurts me," said the contractor, "to have to tell the owner of a small business that I'll have to charge him \$11.50 an hour, plus parts, for a Saturday

call or \$15 an hour on Sunday. I try talking the customer out of the weekend call."

Instead of using servicemen during slow months to make contract inspections, this contractor puts them to work reconditioning old equipment for resale. "My men are trained to be specialists in servicing equipment we sell. I spend thousands of dollars educating them; providing them with special test equipment; showing them the correct methods of repairing our equipment.



Contract Service

All extras at no additional cost

SERVICE CONTRACTS with no charges for extra service. That's the policy at Boston Filter, Charlestown, Mass., where there is an annual 10 percent increase in the number of service contract customers.

"We never let a customer down when we can help him out of a fix," Roger J. Pariseau, service supervisor, told us. "In fact, we'll even fix his plumbing if it prevents him from calling in another serviceman."

Since contracts are all-inclusive, each fee has to be carefully considered so Boston Filter is not left holding the bag. The man behind the price is George Ackerman, the firm's veteran service manager.

Ackerman, after setting a base price for each customer according to a set schedule of fees, takes four other things into consideration. They are:

- Tonnage of the unit.
- Number of filter changes it might need in a year.
- Cost of transportation.
- Kind of cooling (comfort, industrial, or laboratory).

Ackerman classifies banks, stores and homes as comfort cooling; anything open 24 hours a day under industrial, and jobs requiring dehumidification or humidification as laboratory cooling.

After paying the specified fee the customer never has to pay extra for night calls, weekend calls, all parts (including compressor), nuisance calls, extra filter changes, same-day or 24-hour service, or any replacement of a control (including some specialized electronic controls).

In addition, each contract carries a minimum of four preventive maintenance inspections every year. Some

"When we sell a new piece of equipment, we send a factory representative out to explain the system to the customer. This costs us \$50. We tell the customer to ask all the questions he can think of and take notes. If we have to send a representative back, the customer has to foot the bill. Believe me, the customers pay attention.

"We even give customers a \$35 set of tools to help him service his equipment. He gets complete instructions. We find this really pays." ♦

are inspected oftener and this is taken into consideration when the yearly fee is established.

Leads for service contracts come from the firm's filter and sales departments, mechanical contractors, and plant engineers. All leads are referred first to Pariseau, who calls personally on the prospect.

"I study the installation, noting anything special that the serviceman will need to know when he makes his calls. Then I pass the customer on to Ackerman to set the fee," says Pariseau.

Boston Filter offers a 1-year service program augmenting the factory guarantee. It consists of regular maintenance checks, changing filters, lubrication, start-ups and pump-downs. When this 1-year program nears an end, Ackerman makes a call on the customer to talk about starting a regular service contract.

"We now have 400 customers on service contract. This is an increase of better than 10 percent a year," says Pariseau. "We have 31 servicemen to handle these accounts."

A system of color-coded cards helps keep track of service accounts. Yellow cards are for service contract inspections; red cards are for units that need to be winterized; blue cards are for rental systems, a big item at Boston Filter; white cards are for accounts not on a regular contract basis; and green cards are for those accounts where the service department only changes filters.

During the off-season, Ackerman keeps his servicemen busy performing the many odd jobs connected with servicing the accounts. Servicemen paint cooling towers, clean equipment, and make general repairs on standing equipment. ♦

Contract Service

Personalized letters promote maintenance contract sales

A SERIES OF THREE personalized letters form the kernel of a campaign to capture new preventive maintenance contract customers for Bay State Service, Inc., Brookline, Mass.

Bay State sends these letters weekly to regular service customers. The letters are from the maintenance manager, service engineer, and switchboard operator, and each has an informal photo of the sender.

The letters are chatty messages explaining the writer's part in providing better, faster, and more profitable service to the customer. There's a return postcard too. If the reader returns it, a representative from the company calls to explain the Certified Maintenance Plan.

Company president Mack R. Hearon told us this promotion method has brought in many new contract customers. He ran the first 3-letter campaign in 1959, has used it frequently since.

Here, briefly, is what the letters say:

► **Maintenance manager's letter**—Jack Miller urges the reader to consider seriously taking a scheduled service contract. He admits contracts might cost more money, but they save money for the customer in the long run because he gets lower operating costs, longer equipment life, and fewer breakdowns. He mentions

that calls are automatically scheduled and that contract holders get preferred service in an emergency.

► **Serviceman's letter**—Basing his message on 15 years of experience, Russ Burke says he knows that periodic maintenance checks prevent costly major breakdowns for the customer.

► **Switchboard operator's letter**—Kay Haratsis says, "I get the hot phone call when equipment breaks down. And most of the calls for emergency service come from people who do not have routine service contracts. It just seems that airconditioning systems, serviced regularly, do not have major breakdowns."

To handle all of its service and maintenance work, Hearon has devised a 2-platoon system of assigning his 29 servicemen. Nine work solely on maintenance contract accounts; 20 handle regular service calls.

"We had to split our servicemen into two groups," explained Hearon. "When they all were in one pool we found we were apt to slight the maintenance end, because we always handled regular service calls first."

Hearon's platoon system has worked well. "We've grown steadily since 1945. We were doing a \$100,000 business in 1955 without much promotion for maintenance work. Now we do \$250,000 a year," he told us.

BAY STATE SERVICE, INC.

Refrigeration ~ ~ ~ Air Conditioning
CERTIFIED MAINTENANCE ~ SERVICE



76 East Street ~ ~ ~ Brookline 46, Mass. ~ ~ ~ REGest 4-6540

Handwritten:
Hello—
Jim Jack Miller
Your Maint
Manager

I hope you'll take just a few minutes to read this and urge you so seriously to take a scheduled service contract.

First of all is the cost element. A service contract may involve more than you have been spending on service before, but you save substantially in three ways:

1. Lower operating costs
2. Longer equipment life
3. Fewer breakdowns - catching troubles while they are still minor.

Any one of these items will more than pay for the additional service cost. And in addition, there are matters of convenience:

4. We schedule the calls automatically - you can forget them
5. Faster service in emergencies, because contracts require preferential treatment.

Please fill out the enclosed card and I will be glad to contact you to work out a reasonable service contract for your equipment.



Very truly yours,
Handwritten signature: Jack Miller
JACK MILLER

BAY STATE SERVICE, INC.

BAY STATE SERVICE, INC.

Refrigeration ~ ~ ~ Air Conditioning
CERTIFIED MAINTENANCE ~ SERVICE



76 Kent Street ~ ~ ~ Brookline 46, Mass. ~ ~ ~ REGest 4-0540

*Hello -
this is
Russ Burke
writing -*



I'm the service engineer who comes out to your place when your air conditioning equipment isn't working right.

I've worked on many hundreds of air conditioning systems over the last fifteen-odd years, and I think I know service.

Maybe I'm too practical, but it seems to me there are only two kinds of service. One kind is to fix or replace equipment that has broken down. The other is routinely to maintain, clean, oil, and adjust so that it doesn't break down. You'd be surprised how much an experienced man can tell about future trouble just from the sound, the feel, the gauges, sometimes even the smell, of air conditioning equipment. Minor adjustments at that point can prevent a costly mess later on.

Like our other service engineers, I would rather see your equipment tick along for years without breakdown, just as you'd like it. If you'll send the enclosed card in to our office, they will contact you to give you a price and explain more in detail what our service contract follows. And please believe all my years of experience - it will be well worth while.

Respectfully yours,

Russ Burke
RUBB BURKE

BAY STATE SERVICE, INC.

BAY STATE SERVICE, INC.

Refrigeration ~ ~ ~ Air Conditioning
CERTIFIED MAINTENANCE ~ SERVICE



76 Kent Street ~ ~ ~ Brookline 46, Mass. ~ ~ ~ REGest 4-0540

*Hello
this is Kay writing*



I'm the girl who answers the phone when you call for emergency service.

I'm not a serviceman, so I can't talk about nuts and bolts. I'm not a salesman, so I can't try to tell you the tax merits of expense versus capital investment.

All I can tell you is this:

I get the hot phone call when equipment breaks down. And most of the calls for emergency service come from people who don't have routine service contracts. It just seems that air conditioning systems, serviced regularly do not have the major breakdowns.

If the routine service seems to prevent breakdowns, doesn't it seem sensible to consider a service contract? If you will send me the attached card, I will see that one of our maintenance supervisors contacts you personally or by phone and explains to you what our service contract covers and an estimated cost on what it would be to you.

Very truly yours,

Kay Hearon
KAY HEARON

BAY STATE SERVICE, INC.

Maintenance contracts are sold for 5-year periods. Contracts may be cancelled in writing by either party within 45 days of the expiration date. Fee changes may be made only on the annual anniversary date.

The 9-man maintenance crew is able to give each customer preferred service. Each man has his own customers, near his home, and keeps his own route book. By planning his work the serviceman is able to follow a set schedule, unless he is sent out on an emergency call.

"We keep these men out of the office as much as possible," says Hearon. "When a maintenance serviceman completes one job, he calls in. If the dispatcher does not have an emergency call for him, the serviceman goes on to his next scheduled stop."

Leads for maintenance contract customers come from other customers; salesmen from Bay State York, Hearon's sister company; maintenance servicemen; and from soliciting contracts from regular service customers who have unusually big bills.

Bay State York salesmen keep Hearon posted on any new equipment installed. Ten months after this equipment is in, Hearon goes to work, selling the maintenance contract story to pick up where the factory guarantee leaves off.

Three times a year literature on maintenance contracts is mailed along with the monthly bills for regular service. According to Hearon, it has been extremely successful.

What about the 20 men that handle regular service calls? Does Bay State have to promote this end of the business? "No," we learned from Hearon, "we get plenty of work from call-ins, sales leads, and from Bay State York's new installations. The only promotion we do is to advertise in the yellow pages of the phone book."

Nine of Hearon's 20 regular servicemen are licensed electricians. "We started this lately because we feel it's necessary in order to cope with today's complex machines. We found it only takes a few months to train a qualified electrician to handle refrigeration and airconditioning equipment, and then we have a man who can handle both types of problems.

"We started training apprentices three years ago. So far, we've selected five men from the parts department to enroll in this 5-year service training program. We haven't been at it long enough to graduate an apprentice so we can't really say how the program will work out. However, it seems to be going fine," says Hearon. ♦



LOW SILHOUETTE of these fan-coil units makes it possible to place them against floor-to-ceiling windows without obscuring view.

Apartment airconditioning system blends with architectural design

WHEN YOU AIRCONDITION AN APARTMENT BUILDING you have to consider its architecture, because people want the cooling system to be attractive as well as functional.

The Lake Meadows housing development near Chicago, Ill., consists of 10 apartment buildings. They range from 12 to 23 stories high and contain 2000 units. This planned community is on 100 acres overlooking Lake Michigan.

Building 10 was the last one to be put up. Its plans specified floor to ceiling glass on the building's exterior. The plans also called for airconditioning the 140 apartments and for the cooling system to blend with the building's architecture.

The only systems considered for installation were fan-coil with outside air, fan-coil without outside air, and induction type.

Standard 25"-high fan-coil units, whether at the wall corners or overhead at the ceiling, were rejected as unsightly and inefficient when compared with an installation in front of, or below, the windows, where cooling and heating loads are greatest.

An induction system was also rejected. It would cost too much to install because its ductwork and unit-to-unit piping require vertical and horizontal enclosures and a continuous curb to conceal the air handlers.

A free-standing Modine fan-coil system was chosen.

The 550 "Low-Boy" units give even air distribution by means of a baffle that proportions the air through the evaporator coil and the stamped outlet grille in each unit. Glass fiber insulation and mastic isolate all operating elements from the room to deaden running noise. The unit is in the center of the window base where conditioned air blankets the window to offset heat gain or loss.

Two small-diameter pipes feed hot or chilled water as needed from a central source. A wall-to-wall metal chase behind the unit conceals these pipes and the drain and electrical conduits above the floor. Window-length drapes have room to hang freely because the unit is recessed a few inches into the wall.

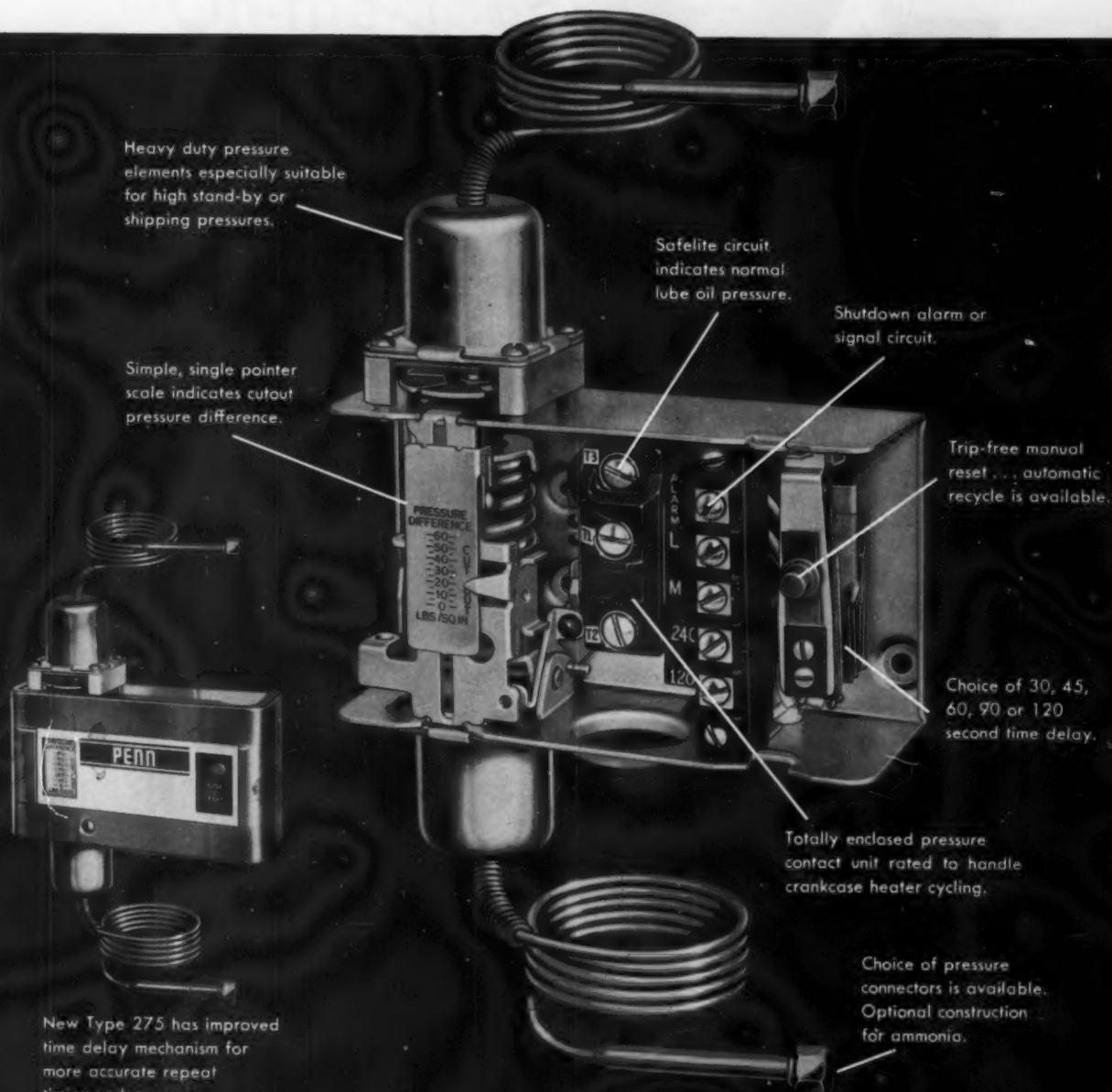
A multi-speed motor control regulates the volume of cooled or heated air and coils with fin edges vertical over the drain pan eliminate condensate drip into the fan housings or onto the floor. The cooled or heated air is filtered, dehumidified, and recirculated to give year-round comfort. The unit's chassis is easily removed for servicing and each fan-coil's filters can be changed for cleaning without removing the front panels.

This attractive and efficient airconditioning system is also economical. It cost about \$975 a ton to install, about \$45,000 less than an induction installation. The operating costs are \$13,200 a year for airconditioning and \$22,100 for heating. ♦

NOW

BETTER THAN EVER!

New Type 275 is the sure way to stop slow pickup or loss of lube oil pressure from crippling pressure-lubricated refrigeration compressors . . . get the complete story from your wholesaler!



New Type 275 has improved time delay mechanism for more accurate repeat timing under severe vibration conditions.

PENN CONTROLS, INC.

Goshen, Indiana

EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N. Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES



IN THE PLANE, Denver distributor Mike Ligeros is ready before take-off to fly up to hundreds of miles to repair truck chilling systems. Last year he made 55 such flights across 10 states.

ON THE GROUND, riding his lightweight, rugged motor scooter, Ligeros travels from the nearest landing spot to where the truck is waiting. When his mechanic is with him they ride tandem.

AT THE JOB, the truck driver is all set to resume his trip after Thermo-King fixed his refrigerating system. If Ligeros didn't have his flying repair service, the truck's load might have spoiled.



A flying repair shop

helps this distributor give

On-the-Spot Truck Refrigeration Service

MAKING ON-THE-SPOT REPAIRS of broken down refrigerating systems of long-haul trucks keeps Mike Ligeros on the move. He owns Thermo-King Sales & Equipment Co., Inc., Denver, Colo., a distributor of subzero compressor equipment for reefer trucks. Mike handles the truckers' emergencies in 10 western states—and that's a large hunk of real estate—by flying his own company plane directly to the job.

When a truck's refrigerating system breaks down, its perishable load will spoil, often within a few hours. Back in 1958 Ligeros saw a big future if he could promise to make repairs anywhere.

Already a pilot, he bought a Cessna 180 plane to enable him to get to the trucks, no matter where they were stranded. The plane carries a lightweight, rugged motor scooter, a heavy load of parts and tools, pilot Ligeros, and a mechanic. It wasn't long before the company was repairing the chilling systems of big transports hundreds of miles from Denver.

This air repair service isn't a stunt. It's a routine part of the business. Ligeros made 55 service flights this year covering thousands of air miles from Denver to the Rockies, from the borders of Canada to down Mexico way.

The rescue operation works like this.

Ligeros wags the plane's wings when he spots the truck. He lands as close to it as he can, on a rural airstrip, in an open field, maybe even a dirt road. The mechanic rides behind him on the scooter to the truck. Then one of them goes back for the tools and parts.

He bought a \$20,000 tricycle gear Beechcraft Bonanza plane last year because he wanted more stability and a fuel injection system. He stores the plane at Denver's Stapleton Airfield, only two miles from his office.

"I can get anywhere in my territory in a few hours, and I often get back to Denver the same day,"

he says. "The job I now complete in a day would take me a week by car. I do most of my routine servicing by plane on weekends, holidays, and at night, because the customer doesn't want his rigs tied up during workdays."

A recent weekend trip into Wyoming went like this for Ligeros and his mechanic. Sunday morning they flew to Powell, 375 miles north, to repair an ice cream truck. Then they flew 75 miles to Worland to repair a produce truck. Next 30 miles to Thermopolis, where they fixed the refrigeration system on a truck.

At Sheridan, 80 miles away, they stopped to see how some new equipment was working for a grocery distributor. Finally they flew 95 miles to Casper, where they stayed overnight. Monday morning Ligeros and the mechanic serviced the trucks of a local packing-house, then left for Denver, getting back in the office before noon.

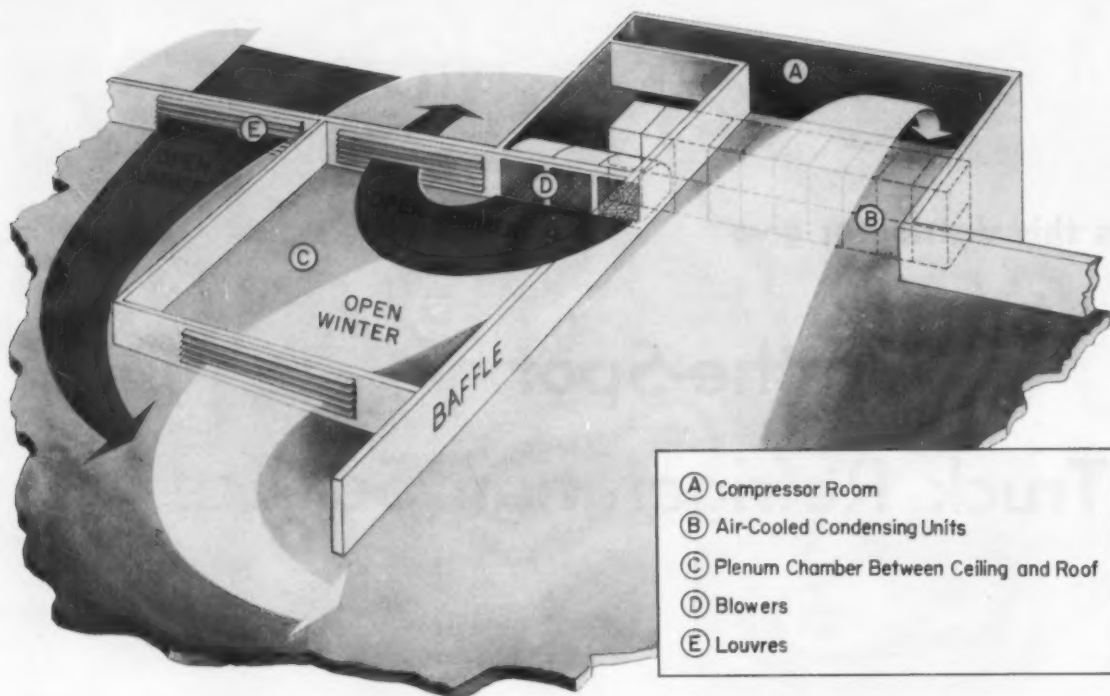
Five service calls covering more than 900 miles in one day!

The average service call is within two hours flying time from Denver—about 400 miles—with enough equipment aboard to do anything from installing a new set of controls to rebuilding a compressor.

Successful? The company started as a 1-man operation in a small 1200-sq.ft. shop. Now it has 15 employees working in a new 10,000-sq.ft. building in Denver, and 7 more employees in a 6500-sq.ft. office and shop in Salt Lake City.

Ligeros has increased sales four times with his 200-mph flying repair shop by getting orders from accounts his salesmen hadn't even called on. He credits a lot of these orders to the publicity because of the plant.

"All the customer pays is my mechanic's time," he says. "This johnny-on-the-spot service really pleases the customer and builds my business." ♦



Recirculating condenser heat cuts supermarket's fuel costs

YOU CAN REDUCE heating and cooling costs merely by not wasting condenser air. Haggett Engineering Co., Boston, Mass., proved it in a recent test at a nearby supermarket.

Firm president Richard M. Haggett wanted to find out how much could be saved in fuel costs by passing heated condenser air through the attic space during the heating season instead of discharging it outside.

This system removes condenser heat from the market. Furthermore, it reduces the heating and cooling load on the system, which affects the store's 11,000-sq.ft. selling area.

HERE'S HOW SAVINGS WERE FIGURED

	Recirculating	Discharging
Gas used (cu. ft.)	107,640	130,160
Fuel degree days	693	525
Cu. ft. per fuel degree day	155	248
Cost for fuel per fuel degree day	22.5¢	36¢

Fourteen air-cooled condensing units are double decked in frames in a special room at the rear of the building. There are no remote condensers, cooling towers, or evaporative condensers. No equipment is exposed to outside weather.

Here's how the test was set up.

Recirculating the air—During cold weather, they discharged the heated air from the condensers through the attic space, using a system of louvres, baffles, and blowers. This blanket of warm air reduces heat loss from the conditioned space.

Thermostatically-controlled blowers regulate the amount of air circulated in the attic. This air determines how much heat is dissipated from the time the heated air leaves the condensers and is returned.

Air must be between 50 and 60 F before reentering the condensers. If the air is too cool, blowers are stopped until the heat builds up. On warm winter days, attic air might become too warm. To prevent it, Haggett opened auxiliary louvres, admitting raw outside air.

DISCHARGED CONDENSER HEAT follows closed circuit pattern during winter (white arrows). Blowers drive heat into plenum area, through louvres and around baffle. Heat drops from attic to floor below where it is passed through condensing units, and drawn up through blowers to start its journey all over. During summer (blue arrows), fresh air is drawn through louvres from outside, and is discharged to outside after cooling condensers.

Discharging the air—In this part of the test, they brought in air for the condensers directly from outside, passed it through the condensers, and discharged it, heated.

Results—They read the gas meter at the start and at the finish of each test, and recorded the number of fuel degree days.

Figures in the table on the facing page show they saved 37.5% in fuel used by recirculating heated condenser air. There's a difference of 13.5 cents in fuel cost for each fuel degree day. Multiplying this difference by the number of fuel degree days (5800), estimated fuel savings are \$783.

"This savings represents a substantial and worthwhile economy in operating costs. But, it is by no means all you can save by using this ventilated attic-condenser air system," Haggett told us.

"Of equal importance is the savings in cooling costs. By a simple modification of the air system, you pass outside air through the attic area before entering condensers. This reduces the solar heat gain from the roof, a big cost in sizing and operating comfort cooling equipment," he said.

During the cooling season, air would enter the attic through louvres and pass through the attic at temperatures only a degree or two higher than outside air. Since this air ventilates the attic, the temperature of the attic is lower than it would be without ventilation. The moving air serves as an efficient insulating force.

Conclusions—Haggett emphasized these additional savings in a recirculated system:

- Less original investment in heating equipment (up to 50%).
- Less original investment in cooling equipment (up to 35%).
- Less original investment in refrigeration equipment. There's no need for cooling towers with expensive plumbing, winter controls, and remote sumps; or remote air-cooled condensers with expensive refrigerant piping and cold weather controls.
- No expensive maintenance, replacement, and service costs on outside equipment such as cooling towers, evaporative condensers, and remote air condensers.
- Placement of all condensing units and all accessory equipment in one room for highest operating and servicing efficiency.

Haggett has installed this type of system in 12 other supermarkets. "It really depends on the building. No two are alike," he says. "We can modify this system to fit any large supermarket." ♦

Cooling piped to cars builds business for drive-in

A GOOD EXAMPLE of an airconditioning contractor's ingenuity is the system that cools customers' cars at a drive-in restaurant in Fayetteville, N.C.

It is only the fourth such installation in the country. It is so new that the contractor, Glenn Newberry, Inc., Fayetteville, admitted afterwards, "what we did was mostly feel our way."

There were plenty of problems. One was where to put the compressor equipment. It consists of four 7½-ton compressors, a 7½-hp fan to force the cold air to the cars, and a circulating water tower. The drive-in isn't very large and needs all of its space for food and service. So the Newberry firm put these components on a concrete floor, surrounded by a latticework frame, to the rear of the lot.

Ducts run under parking area

Owner Bob Kleha didn't want the terra cotta ductwork that would carry the air put under parking canopies where the three other drive-ins had put it. Instead, he had the asphalt parking lot torn up and the air ducts run underground to come up between 14 parking spaces. These ducts were sunk at depths of from 2 to 6' to protect them from heavy traffic and pavement heat. The outlets are terra cotta T's. Into these are inserted steel standards, which hold flexible hoses that carry the air into the cars.

These hoses, originally made for chicken hatching machines, came and were first used in 5' lengths. But they often hung on the cars' bumpers and were torn as the cars pulled away. As they became damaged, Kleha trimmed them to what proved to be about the right length, 3 to 4'.

A diffuser, attached to each hose, is inserted into the car window and directed so it won't blow the air directly on the customer's heads.

Compressors are separately controlled

The four compressors are connected to four separate switches to meet various weather conditions. When the temperature is near 90° F, all of the compressors may be going; on cooler days and at night, less capacity is needed. With the four switches, it's simple to get just the cooling capacity needed.

The system cost about \$15,000 and the average cost of electricity to run it is about \$90 a month. The owner says that the overall cost of operation has been quite reasonable. He feels that, "The publicity we got from the system was worth the investment. It started people talking about us . . . and, of course, the equipment has been doing a good job of cooling cars. The cooling is almost immediate," Kleha says, "so customers stay longer and order more." ♦



Now you can handle 90%
of your replacement control
calls with just 24 ...

NEW RANCO A30

Replacement Control Packages

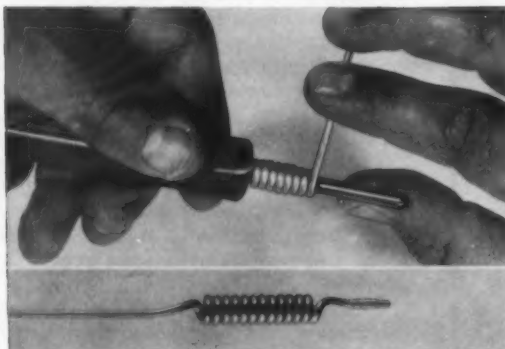
Imagine! Only 24 basic controls and installation packages and you're in business to handle 9 out of every 10 control calls. Installation is fast and simple ... you've everything you need to do the job on the spot. And you know it will be done right the first time. You service more jobs per day, boost your weekly profits. Be sure to see your wholesaler about new A30 Replacements today!



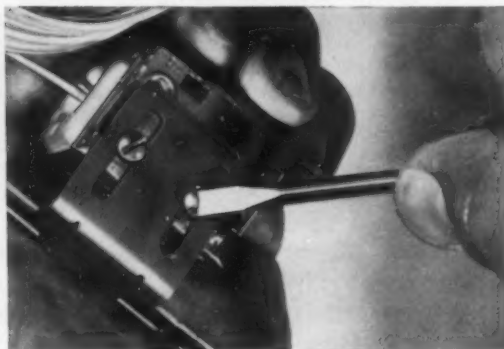
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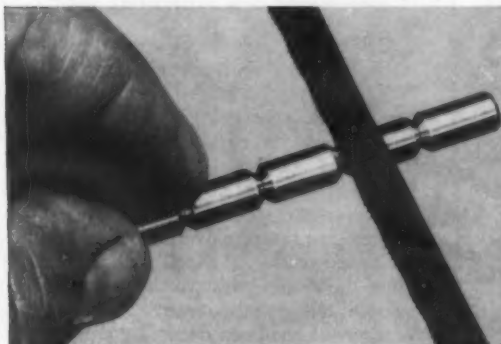
In Canada: Ranco Controls, Canada Ltd., Toronto 18, Ontario



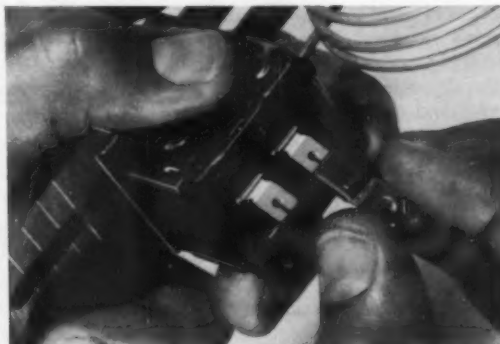
SHAPE the capillary tube (if necessary) with Ranco's new capillary forming tool available from your wholesaler.



ADJUST the mounting bracket on the new A30 Replacement for height and mounting hole spacings.



SAW dial shaft extension (unattached to control) to adapt it to any desired length and insert it in the Ranco A30 Replacement.



ADD terminal adapter clips (if necessary) and the A30 Replacement is ready for fast installation.

circle 59 on reader service card

Here's How

PROFITABLE SERVICE AND INSTALLATION PRACTICES

You can use vibration control as a sound selling argument

It's A LOT CHEAPER to provide proper vibration control at the time you install a refrigeration or airconditioning system than it is to correct a vibration or noise problem after the equipment is in place.

These problems are more common with airconditioning systems, because often the equipment is in or near the conditioned space. This makes vibration, or the noise caused by vibration, disturbing to the people living or working in that space.

In buildings not designed for airconditioning equipment, excessive vibration can cause structural damage.

The right isolation mountings can prevent objectionable transmission of vibration and structural-borne noise. The wrong mountings may be worse than none at all. They may actually amplify the transmission.

Proper vibration control shouldn't make your jobs any tougher to sell, because the cost of even the best vibration isolation mountings will amount to only a very small percentage of the total contract price and the advantages of adequate vibration control provide you with some strong selling points.

Many factors combine to determine the amount and type of vibration isolation required for any job.

Check these selection factors

Type of floor. Wood floors, concrete-filled sheet metal pan floors, and similar types of light weight construction require special attention to insure that adequate vibration control is provided.

Location. In quiet surroundings, on upper floors, and similar installations, more effective isolation is required. Installations near column footings or load-bearing walls may transmit vibrations up into floors above. The general range of allowable vibration transmissibilities for different job conditions is outlined in the following paragraphs. Transmissibility is the percentage of the disturbing force that is transmitted through the isolation mounting.

Extremely critical conditions: Large heavy machinery in penthouses, directly over offices, libraries, hospital rooms, on resilient mezzanines, etc.—maximum tolerable transmissibility, 10%.

Critical conditions: All upper floor installations (except the extremely critical ones) and some ground floor installations near quiet areas in hospitals, broad-

Continued on page 60

Here's a guide . . .
to relative effectiveness
of the three common types
of vibration isolation media
at various speed ranges

Frequency of Disturbing Vibrations Cycles/ Minute	ISOLATION MEDIUM		
	Steel Springs	Rubber	Cork
Under 1200	Required	Not Recommended*	Unsuitable*
1200- 1800	Excellent	Fair	Not Recommended
over 1800	Excellent for critical jobs	Good	Fair to Good

*Except for shock and noise in non-critical installations.

casting studios, libraries, etc. The bulk of installations requiring steel spring isolators fall into this category—maximum tolerable transmissibility, 10 to 20%.

Non-critical conditions: Installations in basements, on ground floor (except critical ones), and in industrial areas where some transmission can be tolerated because of greater building or ground mass to absorb it, where ambient noise level is higher, and where there is greater distance between equipment and critical areas. This is typical of the range generally covered by rubber or cork, or a combination of the two—maximum tolerable transmissibility, 40 to 60%.

Type of equipment. Certain types of equipment require more effective vibration control than others because, by their very nature, they create greater disturbance. Reciprocating machines, for example, generate greater unbalanced forces than centrifugals.

A different problem exists with fans. With ordinary centrifugal fans in non-critical installations, the blade frequency (rpm x number of blades) causes the vibration and noise problem; for critical jobs and high speed fans the rpm disturbance is the most important. Unbalanced forces at motor rpm often occur in industrial exhaust fans, due to motor wear and accumulation of foreign matter on the blades.

Speed of equipment. The lower the speed of the equipment, the greater must be the static deflection in the isolation mounting for good results. If the lowest disturbing frequency is efficiently isolated, then any higher frequency automatically will be isolated even more efficiently. So select the vibration mount based on the lowest equipment rpm (except for fans in non-critical locations).

The relative effectiveness of isolation media at various speed ranges is indicated in the accompanying table.

What vibration mounts to use

Steel springs, rubber and cork are the most effective and most universally applicable isolation materials.

For low speed equipment you generally should use steel spring isolators because they are the only type capable of giving the large deflections required.

For non-critical installations you can use isolators of rubber or cork, or a combination of the two. Cork is used primarily under large concrete foundations. You can also use these materials as sound absorbing pads in conjunction with steel spring isolators.

Ambient temperature and other conditions may influence the type of isolation materials you use. For example, don't use cork or Neoprene rubber where temperatures run over 200 or under zero F. And don't use natural rubber in the presence of sunlight or oil. You can use synthetic rubber with special oil-resisting properties where oil is present, and some special compositions will resist higher or lower temperatures.

Cork is not affected by water, oils, or acids normally

encountered, but is attacked by strong alkalies and will rot under repeated moistening and drying. Steel spring isolators are not affected by any of these adverse conditions.

How to install them

No matter what type of vibration isolators you use, be sure to follow the manufacturer's instructions for installing and adjusting them. If you don't, you're apt to end up with an installation that costs more and does not do the job as effectively.

Use flexible connections. Any rigid connection to the equipment mounted on isolators will act as a restraint and may transmit vibrations, thus reducing the predicted efficiency of the isolators.

Always use flexible connections with ductwork. Use them with piping, too, where you can. If flexible hose is not suitable for piping connections, then be sure you use piping runs 15 diameters long in each of two directions before fastening to a rigid support. Resilient hangers may help you on such jobs. Use flexible rubber hose connections for water lines, and make sure electrical conduits are flexible, too.

The more resilient and efficient the isolation mounts, are, the greater is the importance of these flexible connections.

Bolting isn't necessary. Usually it is not necessary to bolt isolation mounts to the floor. In fact, this may short circuit the sound insulation pads unless you use extreme care.

In most cases you can just set the equipment chassis or concrete block directly on the isolation mountings, without fastening to the floor. If fastening is desired, special cements are available for this purpose.

Concrete foundations help. Although a concrete foundation between the equipment and the isolation mounting will not by itself decrease the forces transmitted to the building, it will reduce the possibility of pipes rattling and other sources of noise. For all horizontal and some vertical compressors, which have great unbalanced forces and movements, you must use a concrete block to reduce movement, no matter what type of isolation medium you use.

However, concrete blocks are used in only about 5% of the installations employing high efficiency steel spring isolators. On upper floors or any weak floors, where they would be most useful, the weight of such blocks makes their use prohibitive. And concrete foundations generally are not recommended with pad-type isolations, because in most cases you can get better results by spending the extra money for steel spring isolators.

This article was prepared on the basis of material made available by The Korfund Co., Inc., specialists in vibration and noise problems.

Applications MANUAL

ARTHUR H. FARR, consulting editor, airconditioning

Motor-compressor burn-outs: a cause of repeated failures in packaged units

THE FAILURE RATE of hermetic motor-compressors in packaged airconditioners and heat pumps has been growing at an alarming rate. Contractors and manufacturers alike are seriously concerned about this problem. Particularly disturbing is the increasing incidence of successive compressor failures within the same packaged unit.

Cause of this problem lies in the recent design evolutions in the packaged unit field. Striking advances in compressor design have been made in the past 10 years. During this short period the open-type (belt driven) compressor has given way to the R-12 hermetic motor-compressor and then to the R-22 hermetic unit.

As sales of packaged equipment increased each year, hermetic units were developed in larger and larger sizes until now almost every packaged product up to a nominal 100-ton capacity rating is powered by a hermetic motor-compressor, or a combination of such units.

With the old open-type compressor a motor burn-out was just that, and no more. Field repair was a relatively simple problem. In modern hermetic motor-compressor units, however, with the motor housed in the same enclosure as the compressor, a burn-out of the compressor driving motor means that the compressor as well as the motor has to be repaired. And many times, depending upon the exact nature of the burn-out, the balance of the system may need service as well.

The term "motor burn-out" has been used loosely to cover open windings, broken internal leads, failure of a running capacitor or relay, and grounds, as well as true motor burn-outs. One compressor manufacturer states that 30% of all compressors returned from the field tagged "burn-out" are not burn-outs at all, but have become inoperative due to failure of some electrical accessory.

There are a number of possible causes of burn-outs, and a number of troublesome burn-out by-products which set the stage for repetitive compressor failures within a packaged system.

These were not so critical in older systems, which were not as sensitive to the circulation of contaminants and foreign materials. Today's hermetic units, how-

ever, are built to closer tolerances and run at much higher speeds. Temperatures are higher. So these systems must be clean and dry in the strictest sense as dictated by the more severe compressor operating conditions.

Air as a contaminate. Air can enter a system through leaks when system pressure falls below atmospheric pressure, or it can be introduced into the system in small amounts by failure to exercise proper care when adding refrigerant or oil.

It can cause higher than normal temperatures by acting as a non-condensable and thus raising head pressure. It can cause oil to break down directly, and in this manner it may lead indirectly to some refrigerant breakdown.

Also, air in the system provides a source of oxygen which combines with the refrigerant and oil under the influence of high temperature to form water. Or it causes rust to form, and the resulting red iron oxide leads to the formation of iron salts and more water if acids are present.

Moisture as a contaminate. Moisture can enter the system through low side leaks, during factory assembly or field service operations, or as the result of oxidation of certain hydrocarbons of oil, and decomposition of hermetic motor insulation. In airconditioning and heat pump machines it constitutes a most important problem for both manufacturer and serviceman.

Despite all engineering advances and manufacturing precautions, moisture is still found in some machines. Removal of this moisture down to an allowable minimum is absolutely essential to satisfactory operation. Otherwise, the presence of moisture in the system may result in one or all of these undesirable effects:

- **Corrosion of metals.** Water reacts with fluorinated hydrocarbon refrigerants (hydrolysis) to form hydrofluoric acid. This acid then reacts with iron, copper, and aluminum to form metallic salts or sludges of well defined composition.

- **Chemical damage to insulation.**

Continued on page 76

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Self-contained, water cooled. Installs most anywhere without costly remodeling or special foundations. One to four compressors. Multiple compressor models feature step-capacity operation. Available in 3 to 33½ tons.

YORK CHAMPION

Air cooled. Remote heat exhaust section is placed outside—evaporator inside. Low Ambient—operates even at 0° F. outside temperature. Available in 2 to 25 ton capacities.



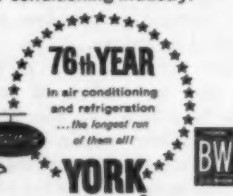
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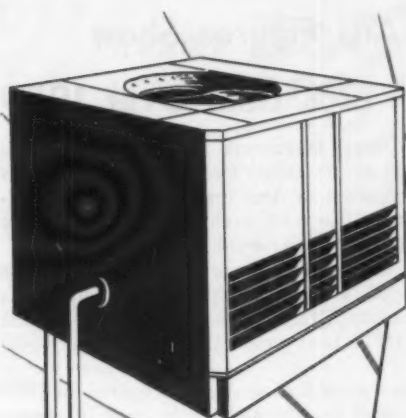
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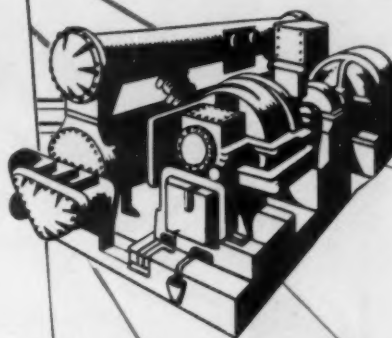
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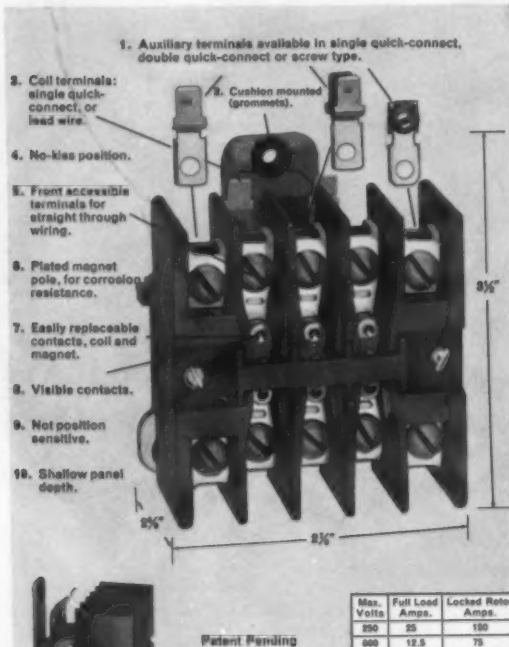
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TYPE 85

DESIGNED FOR UL AND CSA LISTING

Simplifies panel circuitry — helps eliminate terminal boards — cuts wiring costs.

Here is the first air conditioning contactor designed so auxiliary terminals can be added to power wiring terminals. Also, extra dummy wiring terminals can be added when required. Such flexibility can help eliminate terminal boards, lower wiring costs, and provide more versatile and simplified panel circuitry. Auxiliary terminals can be #8 screw or 1/4" single or double quick-connect. Dummy terminals are #10 screw with or without the auxiliary terminals. Consult your application engineer or write for Bulletin C16.



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A COMPLETE FAMILY
OF AIR CONDITIONING CONTROLS**

TYPE C-30, C-40,
C-50 CONTACTORS
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Bulletin 1070

TYPE 80
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Write for
Bulletin C-11

TYPE 75
POWER RELAY
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Bulletin 1030

SERIES 120000 SHUNT
TYPE RELAY — SPMD,
SPMD OR RD-40
Write for Bulletin 1010-A

GENERAL PURPOSE
RELAY
Write for
Bulletin 1000

SERIES 120000 POTENTIAL
STARTING RELAYS
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BI-METAL TIME DELAY
RELAYS AND THERMO-
STATIC DEVICES
Write for Bulletin C-15

ENCLOSURE BANTAM
RELAY TYPES 63 & 64
Write for
Bulletin 1000

RBM CONTROLS DIVISION
ESSEX WIRE CORPORATION, LOGANSPORT, INDIANA
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Latest ARI Figures Show

12% Gain Over 1959

MANUFACTURERS' SHIPMENTS of unitary airconditioners totaled 261,634 units for the first nine months of 1960, as reported to Air-Conditioning and Refrigeration Institute. This total, excluding coils, represents a 12% gain over the same period in 1959.

Unitary heat pump shipments are included, but not room airconditioners, reversible or otherwise. Self-contained unitary heat pumps showed the biggest jump — 29%. Of all heat pumps shipped, 67% were self-contained.

Tables below show first nine month figures for 1959 and 1960, as well as a breakdown by type of equipment for the third quarter of 1960 vs. the third quarter of 1959.

Product description	Third quarter 1960	1959	Change over last year
AIRCONDITIONERS¹			
Self-contained	18,170	19,943	- 8.9%
Remote-condenser	1,488	1,490	- .1%
Refrigeration chassis	*	348	
YEAR-ROUND AIRCONDITIONERS²	1,644	2,842	-41.4%
HEAT PUMPS³			
Self-contained	7,455	4,412	+19.4%
Other than self-contained	3,807	3,572	+ 6.6%
SPLIT SYSTEMS			
Airconditioning condensing units	42,358	39,046	+ 8.5%
Airconditioning coils with blower	11,812	9,712	+21.6%
Airconditioning coils without blower	37,008	28,641	+29.2%
GRAND TOTAL⁴	76,160	73,653	+ 3.4%

*Not reported

Product description	First nine months 1960	1959	Change over last year
AIRCONDITIONERS¹			
Self-contained	67,410	66,262	+ 2%
Remote-condenser	5,241	4,679	+12%
Refrigeration chassis	1,018	1,939	-48%
YEAR-ROUND AIRCONDITIONERS²	8,580	9,634	-11%
HEAT PUMPS³			
Self-contained	20,916	16,238	+29%
Other than self-contained	10,391	9,596	+ 8%
SPLIT SYSTEMS			
Airconditioning condensing units	148,078	126,076	+17%
Airconditioning coils with blower	36,002	28,499	+26%
Airconditioning coils without blower	112,340	82,059	+37%
GRAND TOTAL⁴	261,634	234,444	+12%

¹Except window and wall types

²Except heat pumps

³Except room airconditioners

⁴Excluding coils

CONDENSED SUMMARY BY SIZE

JANUARY-SEPTEMBER, 1960 (9 months)					
SIZE	By Condenser-Type		Total Units	Percent of Change from 1959	
	Air or Evaporatively Cooled	Water-Cooled			
	BA	BO			B
Under 27,000 Btu/hr	43,372	159	43,531	+10%	
27,000-32,999 Btu/hr	20,615	60	20,675	+15%	
33,000-41,999 Btu/hr	76,006	5,378	81,384	-0%	
42,000-53,999 Btu/hr	32,261	3,967	36,228	+59%	
54,000-64,999 Btu/hr	29,465	11,553	41,018	+10%	
65,000-96,999 Btu/hr	13,506	5,672	19,178	+6%	
97,000-134,999 Btu/hr	5,758	4,167	9,925	-5%	
135,000-184,999 Btu/hr	2,137	2,221	4,408	+6%	
185,000-249,999 Btu/hr	860	1,265	2,225	+29%	
250,000-319,999 Btu/hr	177	1,072	1,249	-4%	
320,000-379,999 Btu/hr	196	827	1,023	+13%	
380,000 Btu/hr and over	91	681	772	+130%	
TOTAL	226,302	37,332	263,634	+12%	

EVERY **B&G** COMPONENT IN THIS TYPICAL INSTALLATION IS ALIVE WITH STAR FEATURES



B&G CONDENSERS

Lighter, more compact units, featuring quiet, vibration-free operation, uniform gas distribution, cleanable tubes and higher operating efficiencies.



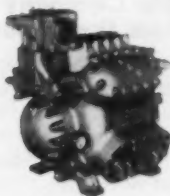
B&G EVAPORATORS

See illustration at right for features which give these units outstanding superiority.



B&G SUCTION LINE HEAT EXCHANGERS

Aid thermal expansion valve operation, prevent liquid slugging.



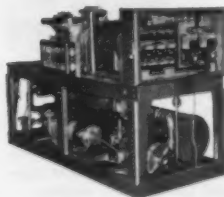
B&G COMPRESSORS

Precisely engineered for vibration-free operation with all the advantages of "open" units. All units have one bore—a few interchangeable parts service them all.



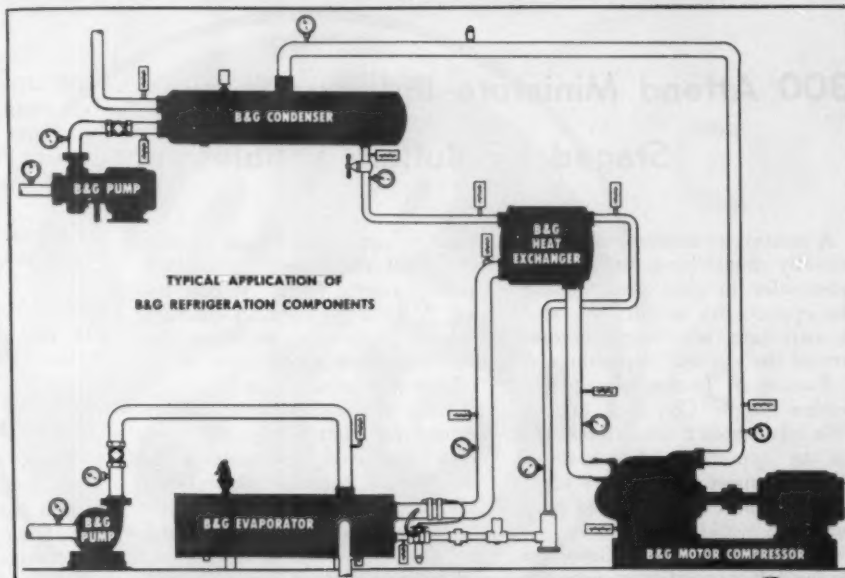
B&G CENTRIFUGAL PUMPS

A full range of quiet pumps for refrigeration and air conditioning systems.



B&G PACKAGE LIQUID COOLERS

A completely integrated and assembled water chiller—the only unit of its kind with all major parts designed, built and guaranteed by one manufacturer.

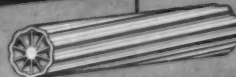


"REF" EVAPORATOR...Featuring non-slugging design...tube bundle proof against freeze-up damage...positive oil return.



SERRATED TUBE HOLES

Assure leak-free joints between tube sheet and tubes



SPECIAL DESIGN COPPER TUBING

Fluted tubing provides positive and permanent mechanical bond between tube and inner fin for all temperature variations—positive contact throughout 180° bend. Inner-fin tube triples refrigerant heat transfer surfaces. Centrifugal force created by the twisted spline holds liquid refrigerant against tube, minimizing slugging and pressure drop.

B&G makes a complete line of refrigeration and air conditioning components—with many commonly used sizes available for immediate shipment from factory stock!

These are quality units throughout! B&G Evaporators and Condensers all offer plus values in efficiency and rugged, long-life construction. They are manufactured by methods which hold shell diameters exact and free of distortion. This permits tight fitting baffles with minimum liquid slippage, greater efficiency and easy replacement of tube bundles if ever necessary.

All units are built to A.S.M.E. Code requirements and are so stamped.

When selecting pumps, B&G Series 1522, 1531 and 1510-B Centrifugal Pumps invite your most critical comparison. They are of vertical split case design, equipped with the exclusive, leak-proof "Remite" Mechanical Seal and noted for quiet, dependable operation.



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Wholesaler **ACTIVITIES**

300 Attend Miniature Industry Show Staged by Buffalo Wholesaler

A MINIATURE INDUSTRY SHOW was recently staged by a Buffalo, N.Y., wholesaler to give manufacturers the opportunity to tell their story to customers who normally don't attend the national expositions.

Thomas F. Jordan, president of Jordan Supply Co., Inc., told us, "We recognized a need in our area for an opportunity for our customers to meet with factory representatives and see exhibits of products and working models."

Many of his newer customers, Jordan felt, needed some introduction to the scope of airconditioning. These are the plumbers, sheet metal, and warm air heating contractors who have recently entered the cooling field.

The show was held in Jordan's warehouse. Manufacturers were asked to ship display materials to Buffalo and man the booth. Jordan took care of providing display space, lighting, and advertising.

A strong direct mail campaign promoted the show. Representatives from more than 300 accounts

showed up despite bad weather. "We did not have one curiosity seeker among them," Jordan told us. "All of those who attended seemed interested in what they saw and were appreciative of our efforts in presenting it."

Since the show, Jordan has received many letters from customers who expressed appreciation for the chance to see such exhibits. Manufacturers, too, have written to Jordan, thanking him for inviting them to participate.

During the show, Jordan Supply celebrated its 15th anniversary.

REGIONAL ROUND-UP

Horace S. Baker has been elected chairman of Region 4. Also named were Emmett McGraw, vice chairman, and Frank O'Brian, secretary-treasurer. A meeting is scheduled for November in Miami, Fla., with time and place to be selected.

New chairman of Region 8 is

Bill Milstead. Bob Trevino is vice chairman, Grady Daniel, secretary-treasurer. Meeting set for Hilton Hotel, Fort Worth, Tex., March 17-18 for members and guests.

Region 10 will meet Sept. 22-24 at Rocky Point in Inlet, N.Y.

Members and guests of Region 12 will meet May 1-2 at Edgewater Gulf Hotel, Gulfport, Miss.

Harry Hoffman Dies

Harry G. Hoffman, past chairman of Region 7, died Jan. 28. He was a partner in Hoffman Supply Co., Springfield, Mo.

Hoffman entered the industry in 1939, serving as secretary to Ozark Motor & Supply Co. He was 57.

Chase Supply Company Moves to New Warehouse

New location for Chase Supply Co. offers better service and modern warehousing facilities in the heart of Chicago's industrial district. The wholesaler's new address is 940 W. 122nd St.

With the entire 32,000-sq.ft.

Continued on page 100



MANUFACTURERS' EXHIBITS like this drew interested crowds all during the miniature industry show sponsored by Jordan Supply Co., Inc. Only expense for manufacturers was in getting booths to Buffalo and then manning them. Jordan took care of everything else.



JORDAN SUPPLY celebrated its 15th anniversary during the show. Owner Thomas Jordan cuts the cake at a cocktail party for exhibitors at the close of the first day's activities. Standing (left to right) are Jack Lupisell, store manager; Charles Steiger, counter; Art Maderer, purchasing; Mrs. Jordan; Percy Smith, office manager; Jordan; Bob Wirtner, sales; Trudy Chmiel, billing; Tommy Thompson, sales manager; Eleanor Hoffman, stenographer; and Don Newell, counter.



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IT MAKES MORE SENSE AND
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GENERAL  ELECTRIC

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RECENT *Installations*

Fluid Units for Radar Controls

THE SAGE AIR DEFENSE system's large radar network has received the first of 12 central station fluid cooler units to cool the radar's electronic controls. The units have been supplied by Industrial Div., American-Standard.

The cooling equipment consists of an evaporative cooler sprayed coil unit combined with a hydraulic recirculating pumping system, piping, and controls. It uses distilled water to take heat from the electronic equipment and distributes it to the atmosphere. This water is cooled, filtered, deionized, and pumped back to the controls for more cooling. Six returns are provided from the controls. The system also has a heater to prevent coil freeze-up when the controls are not operating.

Fraternity Cooled Year-Round

THE PHI DELTA THETA FRATERNITY house at the University of Alabama is the first in its area to have year-round airconditioning. Each room has individual temperature and air circulation control. Dual 30-ton Dunham-Bush Heat-X packaged chillers were installed. Two 15-hp hermetic compressors are the power source.

Glass Wall Shows Off Equipment

AN ALL-GLASS WALL on the new general offices group of buildings of Bethlehem Steel Co., Bethlehem, Pa. displays refrigeration



and heating equipment which delivers 1080 tons of cooling, with color-coded piping an added feature.

On the left of the viewer is the high temperature hot water expansion tank; to its right are two high temperature hot water generators and oil

preheater equipment. Each of the generators can provide 10½ million Btuh at 305 F by boosting the boiling point through pressure control. At the far right in the building's "picture" is one of two absorption refrigeration machines.

Fence Hides Street-level Condensers

A LOUVERED FENCE camouflages the two horizontal street-level condensers that air-condition the elaborate Palm Springs Lanes in Hialeah, Fla. Another feature of the installation is the vertical air discharge.



The system was built around Kramer Trenton air-cooled "Unicons" which move a total of 125,000 cu.ft. of air a minute. Discharging this volume at eye level of passing persons on the street would make them uncomfortable as well as creating a lot of noise from the air discharge. The fence protects the equipment and also permits the necessary air movement at a low noise level. Both units serve one 100-hp compressor.

The bowl lane also has a children's nursery, a restaurant, a cocktail lounge, and numerous bowling alleys.

Curtis Liquid Chiller Cools Towboat

A 15-TON packaged liquid chiller airconditioning system cools the "America," world's most powerful river towboat. The system, chosen for its compactness and accessibility, is also in use on the boat's sister ship, the "United States." Each airconditioned area on the ships can be individually controlled. The chiller was manufactured by Curtis Mfg. Co.

Continued on page 70

Help yourself to more information



You're ahead when you take time to find out what's new in refrigeration and air-conditioning.

Get the latest information that will make your business more efficient.

THE REFRIGERATION & AIRCONDITIONING BUSINESS invites you to use the handy reply cards attached to this form.

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PRODUCT DATA

136	143	150	157	164	171	178	185	192	199
137	144	151	158	165	172	179	186	193	200
138	145	152	159	166	173	180	187	194	201
139	146	153	160	167	174	181	188	195	202
140	147	154	161	168	175	182	189	196	203
141	148	155	162	169	176	183	190	197	204
142	149	156	163	170	177	184	191	198	205

USEFUL LITERATURE

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209	216	223	230	237	244	251	258	265	272
210	217	224	231	238	245	252	259	266	273
211	218	225	232	239	246	253	260	267	274
212	219	226	233	240	247	254	261	268	275

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2	7	12	17	22	27	32	37	42	47	52	57	62	67	72	77	82	87	92	97	102	107	112	117	122	127	132
3	8	13	18	23	28	33	38	43	48	53	58	63	68	73	78	83	88	93	98	103	108	113	118	123	128	133
4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89	94	99	104	109	114	119	124	129	134
5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135

PRODUCT DATA

136	143	150	157	164	171	178	185	192	199
137	144	151	158	165	172	179	186	193	200
138	145	152	159	166	173	180	187	194	201
139	146	153	160	167	174	181	188	195	202
140	147	154	161	168	175	182	189	196	203
141	148	155	162	169	176	183	190	197	204
142	149	156	163	170	177	184	191	198	205

USEFUL LITERATURE

206	213	220	227	234	241	248	255	262	269
207	214	221	228	235	242	249	256	263	270
208	215	222	229	236	243	250	257	264	271
209	216	223	230	237	244	251	258	265	272
210	217	224	231	238	245	252	259	266	273
211	218	225	232	239	246	253	260	267	274
212	219	226	233	240	247	254	261	268	275

NAME _____
 COMPANY _____
 STREET _____
 CITY _____ ZONE _____
 STATE _____

CHECK THE DESCRIPTION WHICH BEST FITS YOUR FIRM

☐ Architect ☐ Contractor-dealer
☐ Wholesaler ☐ Consulting engineer
 Other: _____ (specify)

MARCH 1961

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1	6	11	16	21	26	31	36	41	46	51	56	61	66	71	76	81	86	91	96	101	106	111	116	121	126	131
2	7	12	17	22	27	32	37	42	47	52	57	62	67	72	77	82	87	92	97	102	107	112	117	122	127	132
3	8	13	18	23	28	33	38	43	48	53	58	63	68	73	78	83	88	93	98	103	108	113	118	123	128	133
4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89	94	99	104	109	114	119	124	129	134
5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135

PRODUCT DATA

136	143	150	157	164	171	178	185	192	199
137	144	151	158	165	172	179	186	193	200
138	145	152	159	166	173	180	187	194	201
139	146	153	160	167	174	181	188	195	202
140	147	154	161	168	175	182	189	196	203
141	148	155	162	169	176	183	190	197	204
142	149	156	163	170	177	184	191	198	205

USEFUL LITERATURE

206	213	220	227	234	241	248	255	262	269
207	214	221	228	235	242	249	256	263	270
208	215	222	229	236	243	250	257	264	271
209	216	223	230	237	244	251	258	265	272
210	217	224	231	238	245	252	259	266	273
211	218	225	232	239	246	253	260	267	274
212	219	226	233	240	247	254	261	268	275

NAME _____
 COMPANY _____
 STREET _____
 CITY _____ ZONE _____
 STATE _____

CHECK THE DESCRIPTION WHICH BEST FITS YOUR FIRM

☐ Architect ☐ Contractor-dealer
☐ Wholesaler ☐ Consulting engineer
 Other: _____ (specify)

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IT'S
FREE



Mr. Louis E. Bake, Air-Conditioning Dealer,* says:

"Selling with the A.R.I. Directory is easier, faster, more profitable."



*Mr. LOUIS E. BAKE is
Sales Manager of Cool-Heat
Sales Company, Inc. of
Washington, D. C.

How profitable? Ask Louis Bake, who uses the ARI Directory regularly, finds it a big help in closing sales, and a major factor in his company's 50% sales increase in 1960.

"When I show customers that the unitary system I'm recommending is listed in the ARI Directory, and *certified* under the program of this national association, I add authority to my presentation.

"I point out how the equipment is carefully rated under the Certification Standards, that this rating is subject to checking at any time by the Institute through an independent testing laboratory in New York. Result: I back my sales talk with the authority of the Air-Conditioning & Refrigeration Institute, give my prospects more confidence in what I say.

"I thought selling with the ARI Directory couldn't be beat—until I saw the new ARI Consumer sales piece, 'How to Buy Central Air Conditioning.' This is a *must* for any dealer who wants to tell his prospects the *how* and *why* of central air conditioning. It tells the full, technical story in words John Q. Public can understand, and helps any honest dealer sell a quality system." Free copies of both the A.R.I. Directory and "How to Buy Central Air Conditioning" are available from:

AIR-CONDITIONING & REFRIGERATION INSTITUTE

Department J-311, 1346 Connecticut Avenue, N. W., Washington 6, D. C.

circle 3 on reader service card

You Get WATER

that is

- CRYSTAL CLEAR
- NON-CORROSIVE
- NON-CLOGGING
- NON-PRECIPTATING

with

S-K WATER CONDITIONING



Stiles-Karlsonite Water Conditioning halts corrosion... scale... on all your water-using equipment. • Preventive maintenance... NOW... with Stiles-Karlsonite Water Conditioning products prolongs equipment life... improves operating efficiency... keeps water systems trouble-free.

Today... write for new 24-page brochure... full of valuable information.

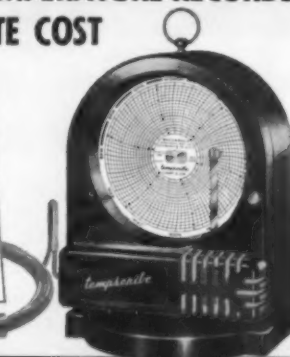


STILES - KARLSONITE CORPORATION

Dept. SKP, Waukegan, Illinois

For Accurate TEMPERATURE RECORDS at MODERATE COST

RANGES AVAILABLE	
Temperature Range	One Rotation of Chart
-30° to +130°F.....	7 Days
-30° to +130°F.....	24 Hours
-30° to +50°F.....	24 Hours
-30° to +40°F.....	24 Hours
-10° to +50°F.....	7 Days
-10° to +50°F.....	24 Hours
-10° to +90°F.....	24 Hours
32° to 100°F.....	7 Days
32° to 100°F.....	24 Hours
32° to 130°F.....	24 Hours
50° to 90°F.....	8 Hours
70° to 130°F.....	24 Hours
-25° to +10°C.....	24 Hours
5° to 40°C.....	24 Hours



Use TEMPSCRIBE Recorders

BULB-TYPE (illustrated)—For recording temperatures at a distance
BI-METAL TYPE—For recording temperatures in surrounding air

- ✓ Portable—easily carried. Can be set on flat surface or hung on wall.
- ✓ Spring-wound instrument-type clock: 3 standard movements—8 hours, 24 hours or 7 days.
- ✓ Instrument measures 4 1/2" x 5 1/2" x 7 1/2"; uses 4 1/4" diameter charts.
- ✓ Chart graduations easy-to-read; spaced uniformly over full range.
- ✓ Pen and its actuating components are in door. Doors are completely interchangeable to convert to any temperature range, or from bi-metal type to bulb-type.

Also available: (1) Interchangeable door with electro-magnetic armature to record running times of motors, burners, solenoid valves, etc. (2) Two-pen doors for recording temperature and electrical operation on same chart.

Write for Leaflets 786 and 872

BACHARACH INDUSTRIAL INSTRUMENT CO.

200 N. BRADDOCK AVE. • PITTSBURGH 8, PA. T-25

circle 14 on reader service card

RECENT

Installations

Continued from page 68

49 In-line Fans are Air Supply

THE TRAVELERS INSURANCE COS., Hartford, Conn., will aircondition about 1 million sq.ft. in its home office building by using 49 in-line centrifugal fans. The fans can be hung from the ceilings or mounted on the walls. The centrifugal wheel of each fan provides a stable pres-



sure curve, assuring minimum changes in volume in the system pressure.

The stable pressure feature also makes it possible to install the fans in parallel. One such application at Travelers is where separate hot deck and cold deck fans draw air from heating and cooling coils and discharge into separate distribution ducts. There are two types of the fans, one that has the motor mounted directly to the fan housing, the other that has both fan and motor mounted separately on an integral vibration base.

The cooling system and its fans, built by Sturtevant Div., Westinghouse Electric Corp., were installed by Libby & Blinn, Hartford, Conn., air-conditioning contractors.

Dual Duct Units Cool Capitol

DUAL DUCT AIR MIXING UNITS, developed by Buensod-Stacey, maintain the desired temperatures for airconditioning in the new \$10 million addition to the U.S. Capitol, Washington, D.C. The system consists of a central station plant that supplies air to two duct systems, one being supplied with cold air and the other with warm air.

The ducts supply all parts of the building. From them connections run to mixing units at each zone to be controlled, where a thermostat regulates the amounts of warm and cold air being mixed and fed to that zone. Each mixing unit has a constant volume device so the same amount of air is supplied to the zone at all times and under all conditions.

how do distributors rate **NOR-LAKE** refrigeration products?

“NOR-LAKE GETS A's IN SCHOOL SALES!”



... says J. A. Kolbe, of John G. Kolbe Company, Richmond, Va.

"It's much easier to sell dollar-conscious schools when our product has both variety and quality—like NOR-LAKE. NOR-LAKE'S quality line means selling flexibility—allows us to compete for sales effectively in both institutional and commercial fields.

"Then too, NOR-LAKE'S 'Fine-Line' appearance is backed up by rugged design based on years of refrigeration experience. Our success in the school market—where NOR-LAKE'S ruggedness and reliability is so important—has returned double dividends to us. Our experience shows that NOR-LAKE means savings in time, trouble and service calls. We get satisfied customers (the most important sales asset for any dealer).

"Now you know why we feel NOR-LAKE products rate A's for quality sales. Naturally Kolbe Company is proud to display and sell NOR-LAKE'S line of refrigeration products, and we expect to continue this pleasant association for many more years."

**John G. Kolbe Company is one of the South's largest suppliers of equipment for schools, hotels, and restaurants.*

NOR-LAKE'S "FINE-LINE" IS A FULL LINE



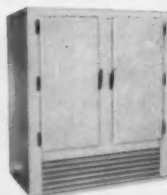
biological refrigerators



refrigerators



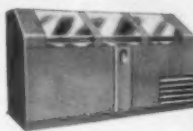
walk-ins



freezer-refrigerator combinations



freezers



bottle coolers



ice cube makers



direct draws

Write today for information concerning NOR-LAKE sales opportunities in your area.



NOR-LAKE, inc.
Second & Elm,
Hudson, Wisconsin,
Dept. 205

Contractor-Dealer ACTIVITIES

Room Unit Installation Time Cut

By Using Separate Surface Raceways

The airconditioning contractor who installs room units in existing hotels often finds he has to tear up the walls to install wiring circuits heavy enough to carry the added load.

Being the man responsible for the job, he has to have other workers finish off the walls. All this work ties up the rooms for long periods, and results in loss of money to the hotel owner, who sells only usable room space.

Because the contractor doesn't know the structural difficulties of the wall until it's breached, he should consider both the replastering and repainting work it will cause. For this reason, he can cut installation time—and save the owner money—by using surface raceways, rather than in-the-wall wiring.

Detroit Firm Changes Name; Adds New Men

Brooks Reeder, formerly branch manager of York-Detroit Contractors, has been named vice president, sales, of Square Deal Heating & Cooling, Inc. This Detroit firm recently changed its name from Square Deal Refrigeration, Inc.

Other former York-Detroit employees who joined Square Deal were W. Wilder, special sales representative; R. A. Karbowski, project engineer; and R. W. Mead, service manager.

Clippinger Joins Marchase

John V. Clippinger has joined Marchase Refrigeration Co., Pittsburgh, Pa., as manager and assistant to the president. He has been with York, Div. of Borg-Warner Corp. for 23 years, most recently as manager, parts and accessories department.

Use of the two separate raceways shown in the accompanying photographs quickly and economically solved the wiring problems posed by this 9-story hotel for the installation of 128 room units.

One raceway comes out of the panel box and branches out down each side of the hallway. A box connector mounted on the base of the raceway connects this run to the second raceway which is fed through the wall and dropped to the baseboard inside the rooms.

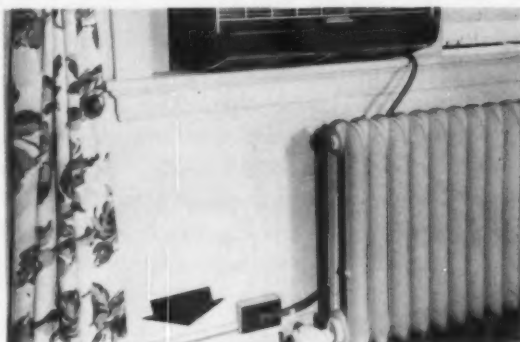
This second conduit then runs over to the window where it pro-



TWIN RACEWAYS (arrows) run down both sides of the hotel's hallway. Both branch from a single panel box.

vides an outlet for the air conditioner by means of a switch and a receptacle box.

The same system is used on each floor of the hotel. There are at least two panel boxes on each floor from which feeds are taken.



OUTLETS ARE PROVIDED for individual room air conditioning units by this raceway (arrow). It is fed through the wall and is dropped to room baseboard.

CHICAGO RACCA CELEBRATES 14TH BIRTHDAY



MORE THAN 125 members and non-member contractor guests helped Refrigeration and Airconditioning Contractors Association of Chicago, Ill., celebrate its 14th birthday Jan. 17. Main speaker at the dinner-meeting was Dr. Emol A. Falls, nationally-known business management consultant from Raleigh, N.C. He discussed "Managing for a Profit."

Jacobsen Elected Head Of So. Calif. RACCA

L. P. Jacobsen has been elected to succeed H. P. Schuch as president of Refrigeration and Air Conditioning Contractors Association of Southern California for 1961.



Jacobsen

Jacobsen is regional construction and service manager for York Corp. in Los Angeles. Other officers are Albert Hanson, National Refrigeration Sales, vice president, and Robert L. Heisler, Key Air Conditioning Co., Inc., secretary-treasurer.

Schuch, Vernon Refrigeration Co., told members that 1960 was a banner year for airconditioning and refrigeration in Southern California. "I see no let-up for the coming year," he emphasized.

He reported record progress in new construction and service work; legislation; consumer education; employee compensation; and manpower training.

New business activity throughout Los Angeles and Orange Counties, Schuch said, showed a 20% increase compared to the area's normal overall increase of 5%.

He pointed out that the work increase, based on number of man hours reported, was due to consistent advertising program of the association's Certified Refrigeration and Air Conditioning Foundation, of which the new president is chairman.

Cooling for Apartments Is Special Clinic Topic

Certified Refrigeration and Air Conditioning Foundation (CRAC) will present a special clinic at the Multiple Dwelling Show in Los Angeles, Calif., March 8-12.

In line with the show's theme of "Techniques in Tenant Appeal," CRAC's presentation will stress the importance of proper engineering, installation and maintenance savings of airconditioning systems to provide maximum benefits for building owners and tenants.

Feature of the clinic will be two, 20-minute daily discussions by rep-

resentatives from the southern California airconditioning industry on the subject.

1000 Set to Attend Janitrol Fla. Meeting

More than 1000 select dealers, wholesale-distributors, and sales representatives of Janitrol Heating & Air Conditioning, a Div. of Midland-Ross Corp. will meet in Miami Beach, Fla., March 13-15, for their annual "Goodwill" meeting.

Limbach Opens Plant For Boston Area Work

Ground has been broken for a permanent office and plant for Limbach Co. in Boston, Mass. F. Allen Mansfield has been appointed manager.

This is the third branch plant for the Pittsburgh, Pa.-based firm. Limbach, which will offer the first integrated mechanical contracting organization in the New England area, hopes to employ 400 people in its new plant.

WHOLESALE-DESTRUCTORS

NOW

... CARRY CONNOR,
THE COMPLETE LINE

TERRITORIES AVAILABLE



KNO-DRAFT all-aluminum diffusers,
grilles, registers ... competitively
priced with steel-made lines

DOREX Type R Air Purification Panel ... for use with standard dust filters

Connor Engineering Corporation, with more than 40 years experience in the design and development of air distribution equipment, offers a complete line of air diffusers of all types, for all industrial, commercial, and residential applications. Complete and priced to compete! And this comprehensive, long-respected air distribution package is now available in protected territories. As a plus value, Connor also

offers its Dorex Type R Air Purification Panel, a semi-disposable, activated carbon filled unit for use with standard dust filters.

You know that it makes sales sense to sell the complete line of a reliable single supplier. Carry Connor, the complete line. Use the coupon below for further information.

CONNOR

kno·draft®
air diffusers

DANBURY, CONNECTICUT

☐ Send me further information on your distributor arrangement and the territories available.

☐ Send me descriptive literature on your product lines available to distributors.

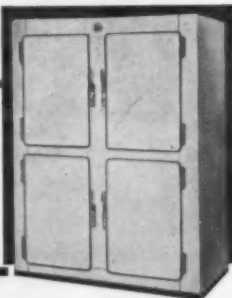
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SELL THE BEST . . . SELL LA CROSSE

REACH-IN

Tops in design, quality and economy . . . La Crosse Reach-Ins feature spacious, easily cleaned interiors . . . adjustable shelving . . . paint grip, zinc grip steel exterior . . . automatic lighting.



FLAKE KING

The new automatic Flake King produces 550 lb. of hard dry ice every 24 hours . . . storage capacities of 280 lb. and 470 lb. . . . grey, hammertone baked enamel finish, stainless steel storage bin and door.

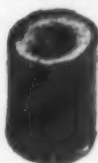
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BEFORE
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TREATMENT

New
SCALEX
CONTAINS NO
HARMFUL
ACIDS



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TREATMENT

Safe HARD WATER SCALE REMOVER

SCALEX, the safe, non-toxic controlled acid, liquid scale remover and air conditioning system cleaner, reduces high head pressure rapidly and completely descales the entire system wherever water flows. SCALEX removes all internal scale safely, without damage to aluminum, copper, brass or ferrous metal or non-metallic parts. SCALEX can be used without damage while the system is in normal operation; there are no acid fumes. No neutralizer is needed. SCALEX removes slime and algae instantly.

SCALEX Inhibitor Z is used together with SCALEX when galvanized metal is to be descaled.

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FUMES

SCALEX IS SAFE TO USE
SCALEX IS EASY TO USE
SCALEX IS ECONOMICAL
SCALEX DOES THE JOB

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Write for descriptive literature to
LESTER LABORATORIES, INC.
P. O. Box 4897 Atlanta 2, Georgia

Some distributorships and manufacturers agents territories still available

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USEFUL Literature

Continued from page 26

ADVANTAGES of the new air filter manufactured by Union Carbide Development Co. Div., Union Carbide Corp. are described and illustrated in Bulletin A1. Performance graphs, photo captions, diagrams, and data tables indicate the filter's characteristics and qualities, typical arrangements, capacities, and resistances.

circle 214 on reader service card

IDENTICAL TWINS are two bulletins, Forms 6001 and 6006, on suction-cooled, accessible hermetic motor-compressors published by Copeland Refrigeration Corp. Each has a table of specs and charts on capacity, power consumption, motor current, and name plate rating, plus an engineering diagram of the compressor. Only difference is in the products temperature range. Form 6001 is on compressors of 7½, 10, and 20 hp; Form 6006 compressors range in sizes from 10 to 30 hp.

circle 215 on reader service card

ROTARY EVAPORATIVE COOLERS are the subject of a new brochure issued by Farr Co. A cut-away photo outlines the product's components. There's also table of dimensional, weight, and motor and fan data, plus sketches of several typical installations.

circle 216 on reader service card

COMPLETE INSTRUCTIONS, charts, and data for using the new bending degree indicator manufactured by Greenlee Tool Co. are given in Bulletin E-301. The booklet features an easy method for laying out and bending pipe and conduit ½ to 6" dia. Steps are fully illustrated and described in simple examples. Two pages of tables provide data required for making 10 to 84" radius bends.

circle 217 on reader service card

A RECENT REVISION of Bulletin 141 is Bulletin 143 from Baltimore Aircoil Co., Inc., on evaporative condensers. The manual discusses general theory and design of condensers along with basic refrigeration cycle. Also information on summer and winter operations, capacity control, typical piping arrangements, and system purging.

circle 218 on reader service card

PURE, HEALTHFUL AIR is your customers' if you sell them on an electrostatic air cleaner, says Form RES60-2221 HP published by York Div., Borg-Warner Corp. The bulletin tells how the air cleaner works and how it compares with ordinary air filters. A photo, physical data chart, sketches, and benefits from a health standpoint also included.

circle 219 on reader service card

ROOF EXHAUST FANS, Types PC and SS, are featured in Bulletins PC-101 and SS-101 respectively, published by Davidson Fan Co. Each of the releases has a capacity table, dimension table, and sections on available accessories, types, installation, and application photos.

circle 220 on reader service card

HOW TO BUILD negative-ion generators and how to measure their ion output is told in Bulletin CE 860 from Lamp Div., Westinghouse Electric Corp. The 8-page booklet is said to be the result of interest in these ions and the ultraviolet lamps which are used in the apparatus.

circle 221 on reader service card

THE 1961 LINE of home airconditioners is discussed in three separate brochures, on the "Pathfinder", "Twinline", and "Champion" units, published by York Div., Borg-Warner Corp. Each of the forms has specification charts on the models of each unit, some typical applications, and technical advances incorporated into the models

circle 222 on reader service card

DETAILED ENGINEERING information on specs and noise levels are among the features of Catalog 1100-B107 released by Air Conditioning Div., Worthington Corp. on its double duct air-conditioning systems. Explained with the systems' design features is how the new ceiling and under-window air blenders operate without motors. Selection and performance data, dimensional data, and system advantages are included.

circle 223 on reader service card

SCHOOL AIRCONDITIONING is the theme of a booklet released by Commercial Div., Minneapolis-Honeywell Regulator Co. The booklet discusses reports on the airconditioning of both elementary and junior high schools, a section on the logic behind the airconditioned school, and testimonials favoring school airconditioning from several educators.

circle 224 on reader service card

COMPREHENSIVE is said to be a new catalog for 1961 issued by Sealed Unit Parts Co., Inc., featuring parts for the repair of hermetics. It contains explanations of many new products, a capillary guide for simplified ordering of capillaries, and descriptions of terminal parts, connecting rods, and replacement reeds.

circle 225 on reader service card

CAPABLE OF WELDING any metal thickness from 28 gage sheet to heavy plate are two welding torches publicized in Form 55-005 from Linde Co. Div., Union Carbide Corp. Complete ordering information and performance data on complete selection, and operating data of welding heads and cutting nozzles also included.

circle 226 on reader service card

NEW SIZES have been added to the Model 3405 of single-stage, double-suction centrifugal pumps, according to Bulletin 721.6 issued by Goulds Pumps, Inc. The release contains specs, interchangeability chart, performance curves, and dimensions. Also pages on pipe tap sizes and locations, mechanical data, and construction details.

circle 227 on reader service card

OFFERING A CHOICE of automatic drive or manual operation for advancing the media across the face of the featured air filter is one of the subjects discussed in Bulletin B-1400-8, published by Farr Co. Also included in the release are design considerations of constructions, ease of installation, ready access, and replacement of media roll. Technical data includes dimensional drawings, photos and sketches, capacity tables, ordering instructions, and proper unit selection.

circle 228 on reader service card

NEWLY REVISED is the current edition of a brochure on vibration mounts published by Rexon Mount Div., Hamilton Kent Mfg. Co. Design and construction features are fully described, diagrammed, and illustrated. Also given are engineering details, performance data, and installation information.

circle 229 on reader service card

BRIEF SPECIFICATIONS that cover two full pages plus four series of controls and other equipment is the highlight of Catalog G-25 released by Burling Instrument Co. There are also sections on types, electric and pneumatic operation, tube sizes and materials, installation, and temperatures.

circle 230 on reader service card

Turner Leak detector

pinpoints halide gas leaks

FAST! PORTABLE! LOW COST!

Freon and other halide gas leaks are instantly located with the super sensitive and completely portable Turner Leak Detector. Built to withstand rugged use. Lightweight, small unit stores easily in tool chest for instant application anywhere.



New LP1157 Turner Kit includes Leak Detector, Propane Fuel Tank, 2 spare reaction plates plus FREE metal tool chest. Only \$13.95.

Use Turner Propane Torches to repair the leak. See the new Tradesman's Torch Kit in companion metal tool chest. Get details from your wholesaler or write

Turner Corporation

857 PARK AVENUE

• SYCAMORE, ILLINOIS

NEW AIR-CONDITIONING AID



Restore the original performance of your air-conditioning

Keep air-flow coils new-clean with METALENE

- Non-flammable, non-toxic.
- Non-corrosive, prevents rusting.
- Approved safe for food and drug plants.
- Non-volatile, harmless to paint.
- To clean cooling coils and permanent filters: Spray on Meta-lene, rinse off using garden hose. Restore factory newness to cooling coils and filters in 15 minutes with METALENE.



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**opens a waiting
market to
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Model No. 25

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Sells itself on demonstration. Ice making on the premises is the modern trend. Stores and institutions everywhere are waiting to be sold. This is your opportunity to make big profits on the finest and most efficient ice flaker ever created. **SURPRISINGLY LOW PRICE.**



Easy to clean and service. All parts are easily and quickly accessible.



Exclusive
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ice auger

Entire ice making mechanism and condensing unit mounted on platform that slides out for convenient servicing.

Ice auger can be removed in seconds, completely taken apart to clean and service.



- Fully automatic.
- Large capacity storage bin.
- Easy to install and maintain.
- Ideal for making slush drinks and snow cones.
- Produces ice flakes at an average cost of 6¢ to 8¢ per 100 pounds.

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Applications MANUAL

Continued from page 61

• **Copper plating.** Copper is dissolved by the oil. This may result from the use of poor quality oil containing elements which react directly with the copper. But even with high quality refrigeration oils, it is still possible that the oil will dissolve copper salts which might be formed by some other reaction.

Water then acts as a catalyst, along with high temperature and other contaminants such as air and alcohol or methanol, to cause precipitation of copper from the oil solution. Often this plating occurs at high temperature points such as valve plates, bearings, and shaft seals.

Oil sludges as a contaminate. This usually indicates that the chemistry of the system is disturbed. Recent information shows rather conclusively that at about 350 F a chemical reaction occurs between the refrigerant and the oil. This reaction, in the case of refrigerants containing fluorine, results in increased viscosity and discoloration of the oil, or carbonization and the formation of hydrogen fluorides.

Actually, the high temperature, plus other contaminants required to form organic acids in the oil and initiate sludging, causes some decomposition of the refrigerant at the same time. This leads to the formation of inorganic acid products that can accelerate further sludging.

When acids are produced they react rapidly with metal parts of the system to produce metallic salts which are neither soluble in the refrigerant nor the oil to any great degree.

Organic acids resulting from oil breakdown combine with iron and other metals to form organic acid salts which then contribute to the sludge. At the same time, the inorganic acids resulting from the refrigerant form crystalline salts which adhere to the metal parts of the system, but which can be physically dislodged to further contaminate the oil.

Thus the process of sludge formation, once started in motion, feeds upon itself.

Acidity as a contaminate. This tends to develop to some degree in all refrigeration systems using fluorinated hydrocarbon refrigerants. The formation of acids and the problems they cause were touched on briefly in the discussion of sludges, because it is impossible to talk about one without involving the other.

As sludges are formed, hydrochloric (muriatic) and hydrofluoric acids are formed in large quantities. For example, if R-12 is completely decomposed it will form approximately 30% hydrofluoric acid and 60% hydrochloric acid by weight.

In the May issue consulting editor Farr will outline procedures for the service and replacement of hermetic systems suffering a motor-compressor burnout.

Product DATA

Continued from page 24

Pipe cover

Product: "Foamedge" pipe cover.

Manufacturer: Sterling Alderfer Co., Akron, Ohio.

Features: Consists of 4' lengths of tubular polyurethane foam encased in vinyl. Surrounds pipe with millions of air cells for insulation, and vinyl provides closed surface. Tubes are slit along side and installed by spreading slit open and letting it snap shut over pipe. Fits $\frac{1}{2}$ " or $\frac{3}{4}$ " copper tubing and $\frac{1}{2}$ " iron pipe.

circle 149 on reader service card

Pressure controls

Product: Line of winter condensing pressure controls for air-cooled systems.

Manufacturer: Carrier Air Conditioning Co., Syracuse, N.Y.

Features: Four sizes available for systems of 5 through 15 tons capacity. Con-



sists of pressure vessel with thermostatically-controlled heater enclosed in insulated casing. Control is teed into liquid line of refrigerant circuit. Thermostat set to maintain refrigerant inside vessel at 90 F. In winter, when saturated condensing temperature below 90 F, heater cuts in. Heat vaporizes refrigerant in condenser and forces liquid refrigerant out the bottom of vessel and into circuit. Excess refrigerant accumulates in condenser and reduces amount of effective condensing surface, causing condensing pressure and saturated condensing temperature to rise. Action continues until condensing temperature reaches 90 F.

circle 150 on reader service card

Flexible rubber pipe

Product: "SoundZorber" wire-reinforced flexible rubber pipe.

Manufacturer: General Rubber Corp., Tenafly, N.J.

Features: Made with pipe walls of multiple-ply rubber-impregnated fabric embedded in rubber. Smaller 1 to 3" pipe sizes have either metal coupling fittings or integral solid molded rubber

flanges; larger 4 to 12" sizes have integral rubber flanges with either 150 or 250 lb. drilling-steel flanges. Reduces or eliminates noise and vibration in piping installations in airconditioning, refrigerating, and heating systems. Absorbs pulsations of liquid column and water hammer noise and vibration.

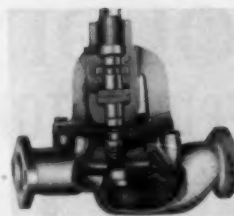
circle 151 on reader service card

Water circulator

Product: "Even-Flow" water circulator for multi-zoned circuits.

Manufacturer: Edwards Engineering Corp., Pompton Plains, N.J.

Features: Has shutoff head of 14.5' of water, $\frac{1}{2}$ -hp motor, and greater flow-



rate. At 10 gpm flow-rate, developed head is 13.2' and at 30 gpm, developed head is 10'. Stainless steel impeller insures top performance and resistance to corrosion and cavitation. Webbed casting

Continued on page 78

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Batch Freezer

circle 88 on reader service card

circle 20 on reader service card

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CABINET CO., Inc.
2800 Webster Ave., N. Y. 58, N. Y.

Product DATA

Continued from page 77

isolates bearing from pump body, giving operating temperatures 40 to 50 degrees lower than other circulators, insuring freedom from shaft seizure due to oil breakdown.

circle 152 on reader service card

Smoke control

Product: Electric eye smoke control.
Manufacturer: Photomation, Inc., Bergenfield, N.J.

Features: Guards against smoke circulated by airconditioners. Exact density of gases is always clearly visible on meter. At any predetermined volume of light cutoff, unit will shut down fan and flash red danger signal. Audible alert signal optional as additional safety feature.

circle 153 on reader service card

Refrigerator-freezer

Product: Combination refrigerator-freezer (Models 1900 D, 2300 D).

Manufacturer: Sub-Zero Freezer Co., Inc., Madison, Wis.

Features: Has 3½" thick moisture resistant glass fiber and coiling at top and under each shelf. Has food index for inventory control, food preparation chart,



evaporator coils in cabinet interior, and condensing unit equipped with service valve. Outside door has built-in lock and trigger action latch. Models measure 71½ x 34½ x 26½ or 29".

circle 154 on reader service card

Conductivity meter

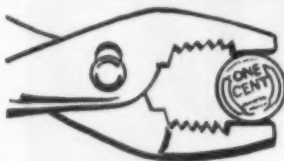
Product: "Dip-Chek" conductivity meter.

Manufacturer: Comroe Laboratories, Inc., Chicago, Ill.

Features: Utilizes operating concept which converts battery dc to ac and eliminates polarization at probe and operates on two small batteries.

circle 155 on reader service card

Continued on page 80



YOU CAN PINCH PENNIES ...

but the man who needs servicing and testing equipment is already paying for it!

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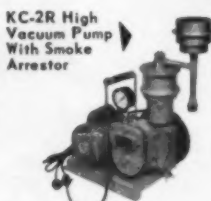
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Unit
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Cap-Run
Test Cord



Thermo-Meter



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Capacitor
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There are 20 different brands of in-line refrigeration driers on the market today. ANSUL is introducing No. 21. We're entering this crowded and highly competitive field for just one reason: the new ANSUL "System Boss" drier will do a better drying job at a lower cost than any of the others.

The "System Boss" makes it possible for you to use a smaller-sized—and consequently less expensive—drier than many of those you've used in the past. It's possible because improved flow characteristics reduce pressure drop . . . because of a better filter arrangement . . . because of a superior desiccant. The "System Boss" is available in all popular sizes from better refrigeration wholesalers everywhere.

21 ANSUL

ANSUL CHEMICAL COMPANY
MARINETTE, WISCONSIN

circle 13 on reader service card

Product DATA

Continued from page 78

Refrigeration drier

Product: "Filter-Kore" refrigeration drier in 1 to 15 tons sizes.

Manufacturer: Kenmore Machine Products, Inc., Lyons, N.Y.

Features: Eliminates plastics, fiber board, and cotton and uses solid core of 100% molecular sieves without diluents. Made from non-corrosive materials.

circle 156 on reader service card

Heat Pump

Product: Air-to-air heat pump that attaches to outside wall of home, reducing installation time and cost.

Manufacturer: Air Conditioning Div., Westinghouse Electric Corp., Staunton, Va.

Features: Is rated at 18,000 Btu cooling. For use in single or multi-story buildings, with one unit serving each floor. Air flows inward through upper opening with minimum ductwork, returning through lower opening. Has twin blowers driven by 1/2 hp motor and can move 650 cu.ft. air per minute. For concrete block buildings but adaptable to other types, two openings for unit made in outside wall for inlet and outlet connections.



Unit hung on outside of wall by bracket extending into openings. Gasket seals unit against wall. Liners inserted into openings from inside building. No refrigerant piping required.

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Cooling-heating package

Product: Through-the-wall cooling-heating package for small commercial applications and apartments.

Manufacturer: Lennox Industries, Inc., Marshalltown, Iowa.

Features: Equipment includes gas furnace, cooling coil, and air-cooled condensing unit, fits in 36 x 36" space. Installed, air handling face of unit extends through the wall and flush with outer



wall surface. Inside of unit becomes furnace base. Cooling coil mounted on top of furnace, and trunk duct taken off side coil cabinet. Provides two tons cooling, 51,000 Btu/h heating. Intake and exhaust air handled same or either side of condensing unit. Also features pre-charged refrigerant lines, continuous welded heat exchanger, aluminized steel burners, safety shutoff, built-in draft diverter.

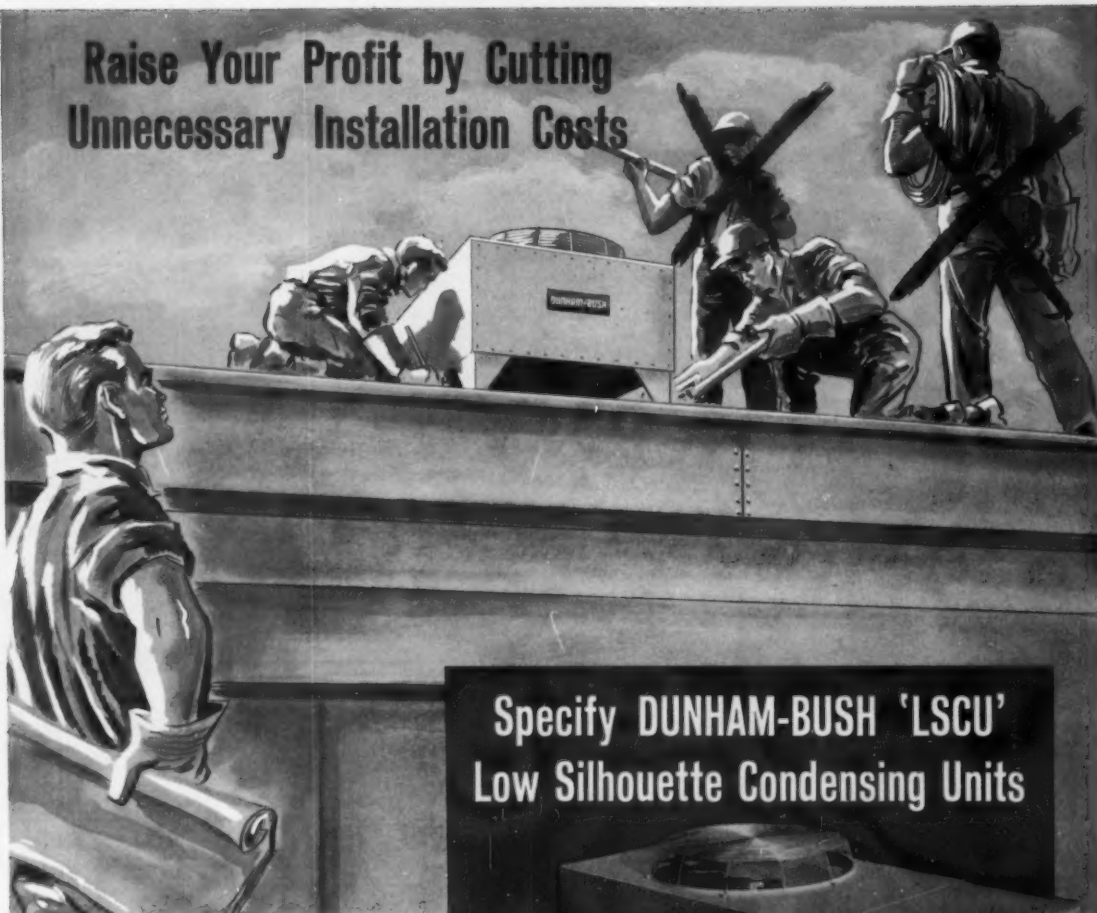
circle 158 on reader service card

Electric cooling units

Product: Electric furnace, air-to-air heat pump, compact air conditioner.

Continued on page 82

**Raise Your Profit by Cutting
Unnecessary Installation Costs**



**Specify DUNHAM-BUSH 'LSCU'
Low Silhouette Condensing Units**



**...Furnished Completely
Packaged...All Piped and Wired**

No unexpected extra installation charges when you select Dunham-Bush 'LSCU' Low Silhouette Condensing Units (or 'LRCU' vertical models). Available in five basic sizes, 10 through 30 tons, these completely packaged, ready to install units are specifically designed for air conditioning applications requiring use of water savers.

The 'LSCU' is basically a standard 'LSBC' low silhouette blower condenser, complete with a Brunner-Metic motor-compressor, Heat-X liquid receiver, electrical controls, and refrigeration accessories mounted in a specially designed section for field attachment or remote installation.

These units can be located anywhere without regard to prevailing winds. The air movement, up and out, means minimum noise ratings and no objectionable air flow toward neighboring buildings.

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The electrostatic action of Skuttle Dust-ban Filters guarantees the removal of dust, dirt and pollen particles, yet allows the free flow of air for maximum heating or cooling efficiency. They are completely washable and never need oiling. 6 popular sizes, \$4.95 each.

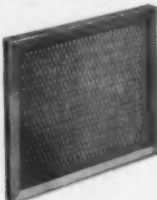


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Filter Gage (value \$1.95) is your tie-in for increased sales. Your customers will receive a free Skuttle filter gage with the purchase of 2 Skuttle Dust-ban Filters or \$1.00 with the purchase of 1 filter.

Skuttle-Aire Washable Filters. Designed for heavy-duty domestic, commercial and industrial applications. These sturdily built filters are easily washed with cold water and never need oiling.



Write today for complete information.

Skuttle MANUFACTURING CO.
Milford, Michigan

Product DATA

Continued from page 80

Manufacturer: American Furnace Co., St. Louis, Mo.

Features: Furnace has 4-stage element with each stage rated at 5 kw; maximum heat output is 68,000 Btu. Heat pump, 3-ton model, for use with auxiliary strip heaters. Airconditioner has centralized heating and cooling mechanism and permits zoned cooling.

circle 159 on reader service card



ty-guard back, zinc-clad steel casing, positive moisture removal. "Conqueror" model is illustrated above.

circle 160 on reader service card

Room airconditioners

Product: 1961 line of 50-cycle room airconditioners, featuring the "Conqueror" high capacity model.

Manufacturer: York Div., Borg-Warner Corp., York, Pa.

Features: Other models are "Discoverer" and "Adventurer." "Conqueror" comes in two models, rated at 12,000 Btu and the multi-room unit rated at 12,000 and 16,000 Btu. Both have wide range of automatic temperature control, 2-speed operation, positive exhaust and fresh air intake and acoustic design. "Discoverer" has two cooling and fan speeds, directional air grilles, automatic temperature control. "Adventurer" features safe-

Isolation pad

Product: Glass fiber isolation pad.

Manufacturer: Consolidated Kinetics Corp., Columbus, Ohio.

Features: Isolates vibration and eliminates lagging machinery to floor and is furnished in 18 x 18 x 1/2" sheets prescored at 2" intervals. Has neoprene jacket impervious to water and other liquids and can withstand temperatures of -300 to 300 F.

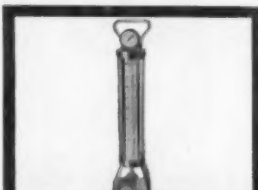
circle 161 on reader service card

Continued on page 84

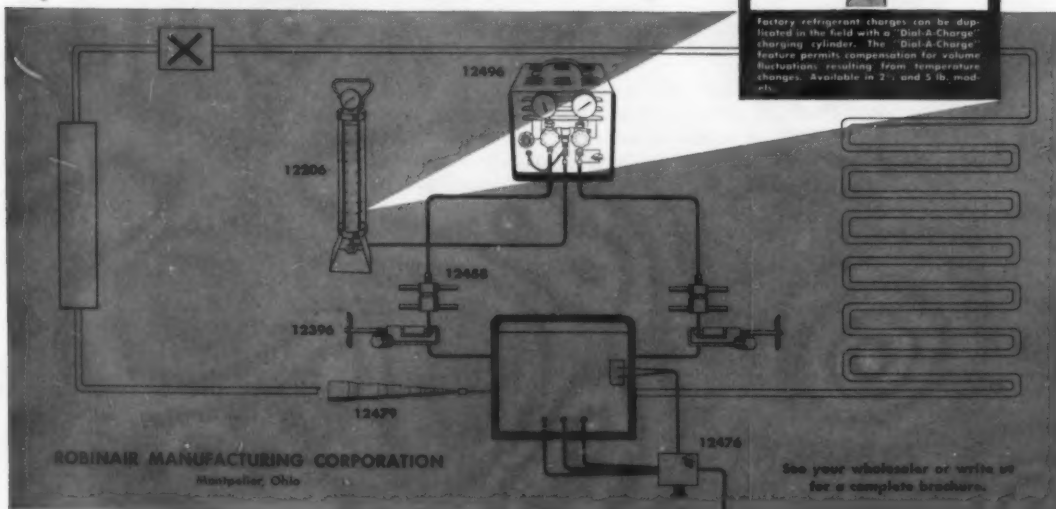
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factory refrigerant charges can be duplicated in the field with a "Dial-A-Charge" charging cylinder. The "Dial-A-Charge" features permits compensation for volume fluctuations resulting from temperature changes. Available in 2" and 5 lb. models.



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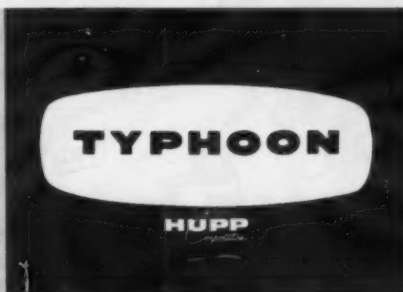


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We don't preach growth, we practice it. Ask any Typhoon dealer. He'll tell you that he's making more profits today than ever before. Here's why. **28 New Units Added To The 1961 Line.** The greatest product range in Typhoon history...the broadest in the industry...to meet the demand for more specialized equipment. **Product scope.** A superior Typhoon unit for every need—a versatile solution for every problem in installation of air conditioners, furnaces, heat pumps. You sell the broadest line in the industry! **Customized Units.** At little or no extra cost, Typhoon custom-assembles its mass-produced components to your specific requirements. Because you save installation costs, you can sell competitively without sacrificing your profits! **Financing plans.** Less financial strain for you, simpler payment plans for your customers. Helps you stock and sell! **Sales incentives.** Exciting programs that offer bonus benefits for you and your family. **Planned progress.** For 1961, Typhoon dealers are following a complete "Prescription for Progress." National advertising. Local promotions. Specialized programs to make more profit from the Commercial, Industrial and Residential markets. Carefully planned. Skillfully executed...to give every Typhoon dealer the ammunition he needs to make more, more easily! All contained in a new sales kit! Study the facts and you'll agree: Typhoon dealers enjoy a considerable advantage in products, promotions and profits. Wouldn't you like to be one? For more facts and Reference Wall Chart on the complete line, use the collect telegram in this ad. Or call or write us.

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Product DATA

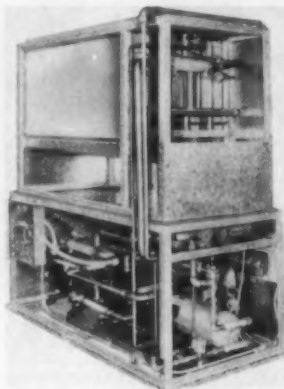
Continued from page 82

Cracked ice machine

Product: Cracked ice machine that produces non-uniform ice.

Manufacturer: Chicago Stock Yards Turbo Refrigerating Co., Chicago, Ill.

Features: Shape of ice averages $\frac{3}{8}$ " to $1\frac{1}{8}$ " x $\frac{3}{8}$ " thick and ice weighs about 36 lb. per cu.ft. Ice forms in sheets and is dropped into ice crusher at bottom of unit. Freezing cycle 20-40 min. In 1 to



200 ton models, single or multiple units, for use with ammonia or any refrigerant.

circle 162 on reader service card

Cleaning brushes

Product: Line of condenser and heat exchanger tube cleaning brushes for power or hand use.

Manufacturer: Schaefer Brush Mfg. Co., Milwaukee, Wis.

Features: Line consists of: stainless steel wire brushes with single or double spiral for stainless steel tubes; fine brass wire tube brushes with single spiral for copper or brass tubes; black nylon tube brushes with single spiral for metal tubes where deposits not heavy. All have diameter from $\frac{1}{4}$ to 1", cadmium-plated extension handles from 12 to 36" long, and $2\frac{1}{2}$ " cadmium-plated nipples with female threads.

circle 163 on reader service card

Industrial ventilator

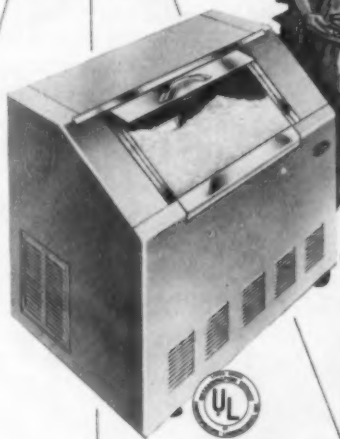
Product: Dual-purpose industrial ventilating system.

Manufacturer: Genie-Air Products, Los Angeles, Calif.

Features: Damper seals top of unit against winter heat loss. A 3-position reversing switch controls direction of fan, which blows air downward on recirculating cycle. Wasted heat trapped under roof line is pulled into fan and blown

Continued on page 86

ROSS temp FLAKED ICE MACHINES



easier to sell because
they are "summer rated"

"Summer rated" means Ross-Temp production will not "fall down" on hot summer days when ice is needed most. The capacity of each Ross-Temp unit is based on operating in 90° air and with 70° water and not the lower 70° air and 60° water so common in the industry. Ross-Temp owners are so much better satisfied that their recommendations lead to other sales for you.

OTHER FEATURES: Waist-high Ice Bin . . . Fits under counters or in equipment islands . . . Only one moving part in freezing chamber . . . Costs only a few pennies a day to operate . . . Choice of 20 models. Every Ross-Temp Flaked Ice Machine is fully checked and tested at the factory.

Write or wire for
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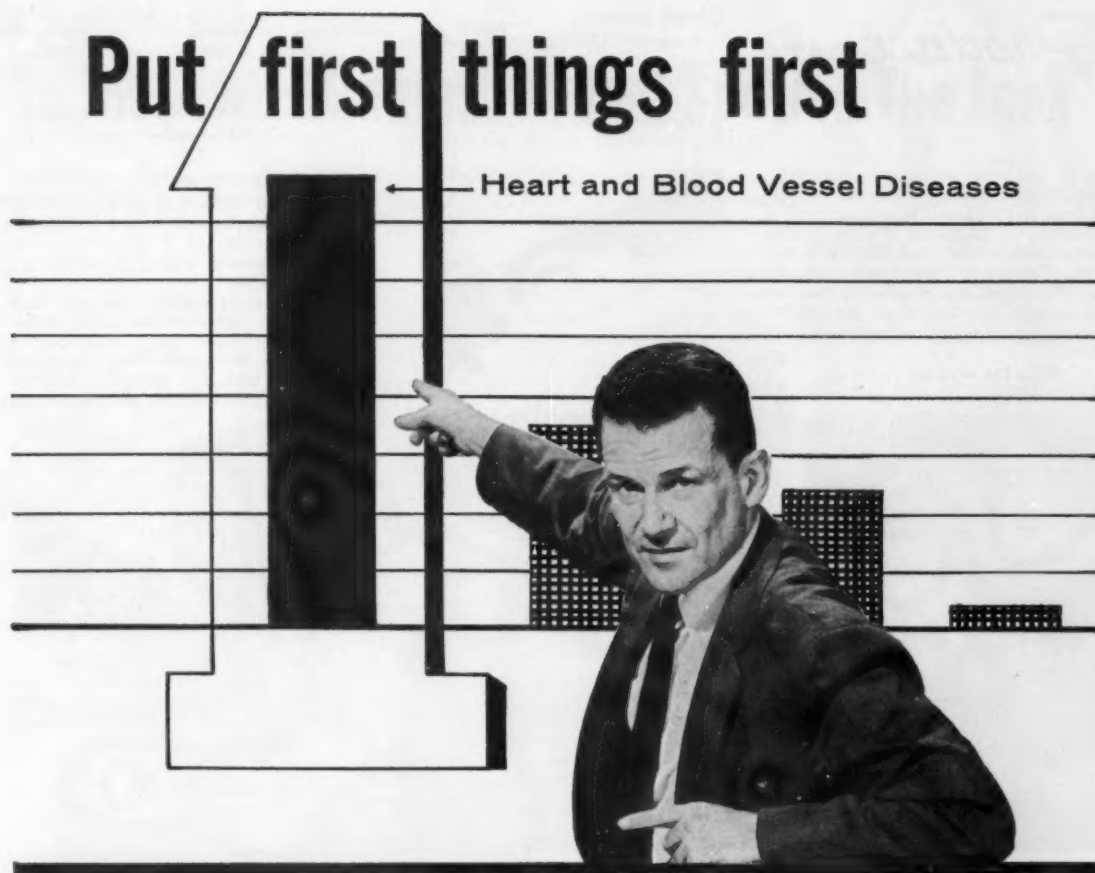
CAPACITIES: 150, 250, 400
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Put first things first



You probably can't give to every worthy health appeal. But how can you choose among them? Why not give *first* to those causes that mean the most to you, your family and your business?

The heart and blood vessel diseases are the #1 health enemy in the United States today. They take more lives each year than all other causes combined. They afflict more than 10 million adults and children. They cause a work-loss of 69 million man-days annually at an

estimated cost of a billion dollars.

Your Heart Fund dollars have already helped to produce great life-saving advances in preventing rheumatic fever, controlling high blood pressure, reducing fatalities from heart attack and correcting heart defects through miracles of surgery.

BUT HEART DISEASE IS STILL THE #1 KILLER. So, put first things first. Put your Heart Fund at the top of your gift list for health.

GIVE to your
HEART FUND



Product DATA

Continued from page 84

out diffuser openings at bottom, carrying it back to floor area. On exhaust cycle in summer, fan blows air upward, pulling hot air into its path and blowing it outside. Damper is lifted up by air and seated against underside of weather dome, with its conical shape directing air flow so it's exhausted without back pressure.

circle 164 on reader service card



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Equally effective is Uni-Crest expanded polystyrene, United's newest development in insulation materials. This modern, lightweight, snowy white material, composed of minute, individually closed cells, has a low K factor, low moisture absorption, and retains its insulating value indefinitely. It is strong, flexible, easy to handle and inexpensive.

Experienced engineers, at United's branch offices coast-to-coast, offer complete consulting and design ser-

Cheek cutter

Product: "Cheekmaster" sheet metal cheek cutter.

Manufacturer: Duro Dyne Corp., Farmingdale, N.Y.

Features: Turns out cheeks for rectangular elbows quickly and accurately.



Can be set in seconds to produce cheeks having radius from 3 to 12" and opening from 3 to 30". No layout needed and cutting done by electric shear. Taper elbow cheeks also cut, and machine allows for flanges and slip locks in finished cheek.

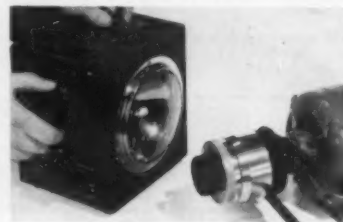
circle 165 on reader service card

Small dynamometer

Product: Pocket-size dynamometer to measure torque and power loading of electric motors.

Manufacturer: Micro Pump Corp., Danville, Calif.

Features: Instrument slips onto shaft and collet tightened by hand. Interchangeable collets fit wide ranges of shaft sizes. Self-contained V-belt pulley adjustable from 2 to 3 1/2" dia. Instrument viewed by stroboscopic tachometer dial



and rpm read from dial. Horsepower then calculated or read from chart. Torque indicated up to 22 in./lb. either direction. Accuracy within 1% claimed.

circle 166 on reader service card

Lagging adhesive

Product: "Clair Coat" lagging adhesive.

Manufacturer: St. Clair Rubber Co., Detroit, Mich.

Features: Is water-based, nonflammable, non-toxic, vermin-proof adhesive with low freezing point. Produces dried film that is waterproof, steam resistant, and withstands temperatures over 200 F.

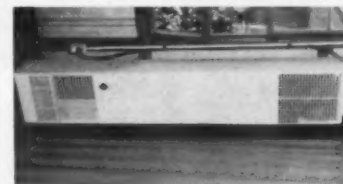
circle 167 on reader service card

Recessed wall heater

Product: Vented, recessed wall heater (Model 60FA "Panelray").

Manufacturer: Day & Night Mfg. Co., Sub. of Carrier Corp., La Puente, Calif.

Features: Can be installed flush to wall or recessed between stud spaces as



measures only 84 x 14 x 10-3/16". Heat delivered at floor level, delivery from front or two other directions with ductwork. In single- or 2-speed models. Vented with 4" oval double wall vent pipe, with casing extension to conceal venting optional. Provides 60,000 Btuh.

circle 168 on reader service card

Continued on page 88



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two hours with another detector . . . then

"In Just Two Minutes My H-6 Spotted The Leak"

—says Mr. Erwin Beardslee (shown below)
Beardslee Refrigeration - Air Conditioning
Elmira, New York.



Typical of thousands of satisfied General Electric H-6 halogen leak detector users, Mr. Erwin Beardslee has been able to speed up his refrigeration service.

"We had a leaking self-contained freezer. Two hours with our old type detector failed to show any leak. Then I tried the G-E Type H-6. Two minutes later we had pinpointed a leak in the air-cooled condenser. Thanks to my H-6 I can now reach more customers per day with faster, more dependable refrigeration-air conditioning service."

Here's why refrigeration engineers and servicemen, like Mr. Beardslee, appreciate the ruggedly portable H-6. When the hand-held detector senses a leak, a probe light *instantly flashes*, pinpointing the leak. And, with the H-6 you locate leaks *faster* . . . it probes from 60 to 100 inches per minute. Adjustable H-6 sensitivity lets you set minimum leak level . . . even leaks as small as $\frac{1}{2}$ ounce per year are detected quickly, positively, and *economically*. Best of all . . . when used in confined areas, the H-6 gives you more protection than other methods.

Don't delay another day. Check into the benefits of fast, dependable electronic leak detection and start "profiting" with the compact, lightweight General Electric H-6. Get the full story from your local air conditioning and refrigeration wholesaler . . . ask him about the new, convenient H-6 finance plan . . . or, clip the coupon below and send directly to Section 598-05, General Electric Co., Schenectady 5, N. Y.

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Please send by return mail, Bulletin GEA-6827,
on "The Type H-6 Leak Detector."

NAME _____
TITLE _____
COMPANY _____
ADDRESS _____

circle 31 on reader service card

circle 86 on reader service card

WITT LOW TEMP. Defrostair COIL WITH EXCLUSIVE PATENTED Automatic Electric Defrost System



PAT. NO.
2539813
-2492970

DEFROSTS AUTOMATICALLY

FOR LOW TEMPERATURE ROOMS,
FOOD STORAGE, FOOD FREEZING,
ICE CREAM STORAGE, INDUSTRIAL
LOW TEMP. APPLICATIONS.

Witt exclusive Defrostair patented
Heat Trap coil requires only a low
cost single pole, double throw
time clock for complete automatic
defrosting. Easy low cost installa-
tion. Requires no re-evaporation
or special plumbing. Completely
automatic. Available in 21 models
ranging in BTU capacities from
1400 to 44,100 at 10°F.T.D. Write
today for complete Witt Catalog.



Defrostair FOR BELOW
FREEZING

A. H. WITT COMPANY, INC.

940 N. Sycamore Ave.,
Los Angeles 38, Calif.

Product DATA

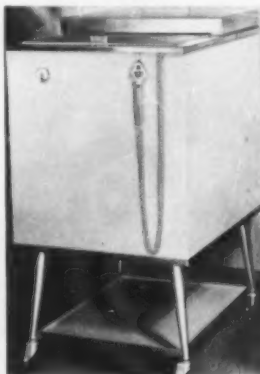
Continued from page 86

Compact refrigerator

Product: "Sociable" compact refrigera-
tor for home or office.

Manufacturer: Beverage-Air Co.,
Spartanburg, S.C.

Features: Has 3.5 cu.ft. interior. Four
quick release ice trays supply more than
eight lb. of ice cubes, refreezing in
2-3 hrs. Cooling temperature of 30-40 F



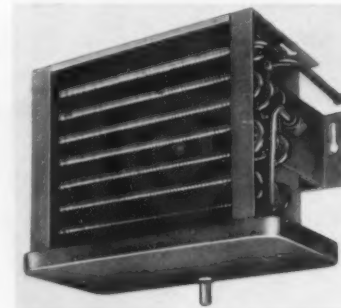
supplied by 1/2-hp, hermetically sealed
unit. Standard equipment includes four
14" aluminum legs and choice of bottle
opener or bottle-can opener on chain.
Holds 120 6-oz. or 72 12-oz. bottles.

circle 169 on reader service card

Unit coolers

Product: All-aluminum "MX" unit
coolers.

Manufacturer: Tenney Engineering,
Inc., Union, N.J.



Features: Line covers small units for
back bars and reach-ins as well as large
units for walk-ins with capacities up to
54,000 Btuh per unit. Casings are all
heavy gage embossed aluminum. Sturdy
motor hangers, resilient motor mounts,
shaded pole permanently-lubricated mo-
tors also featured.

circle 170 on reader service card

For any refrigeration or air
conditioning application which
requires liquid circulation,
specify a Little Giant Pump.
Little Giants op-
erate when com-
pletely submerged,
are easy to install
and require no
costly maintenance



ILLUSTRATED NO. 2-HOODED

FOR COMPLETE
SPECIFICATIONS, WRITE

Little Giant
PUMP COMPANY

A Division of Little Giant Corporation
3810 N. Tulsa, Oklahoma City, Okla.

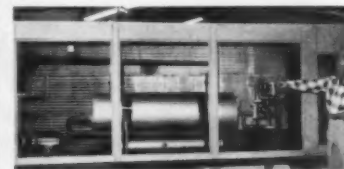
circle 44 on reader service card

Heat pump chiller

Product: "Circle-Vec" line of heat
pump chillers.

Manufacturer: Forston Co., Houston,
Texas.

Features: Does not require cooling
tower, boiler, or ductwork. Inside con-



vector units available in ceiling, ceiling
hideaway, console floor, and console
hideaway models in 200, 300, 400, 600,
800, 1000, and 1200 cfm. Has condenser
coils of copper tubing and aluminum
fins, special water controls and safety
devices, weather-proofed housing.

circle 171 on reader service card

Reversing motor

Product: "Rapid" reversing motor.

Manufacturer: Louis Allis Co., Mil-
waukee, Wis.

Features: Integral hp, polyphase rat-
ings in open drip-proof, totally-enclosed
fan-cooled and non-ventilated enclosures.
Offers up to 125 idle reversals per min-
ute in smaller sizes and can exceed 200
idle reversals per minute with blower.

Continued on page 90



He's sweating out a scale problem

He's really sweating—tons of meat in the freezer—and the refrigeration cooling water system is shut down because it's clogged with scale. He runs a good chance of a heavy loss.

Refrigeration systems can gradually scale up and still perform reasonably well under normal conditions. But when the temperature goes up, scale gets in a knock-out punch, and the system is down—until it's cleaned.

Don't let this happen to your customers. Use Calgon® Scale Remover to get a system clean, and Micromet® Plates to keep it clean. Calgon Scale Remover works fast and is safe. It contains corrosion inhibitors for copper, brass, steel and aluminum.

Micromet Plates are ideal for controlling scale deposits. One charge will last a season in most systems. Self-feeding, Micromet Plates are simply hung in the water spray.

If the problem is water... **CALGON HAS THE ANSWER**

More than 35 years of experience with water problems of all kinds... research facilities dedicated to a constant search for better water treatment chemicals and methods of treatment... analytical service and expert technical advice for every customer... and a full line of products backed by the Calgon name... all of these are at your service. Call on Cal-

gon for help on any water problem.

Ask your refrigeration wholesaler about these quality Calgon products — Calgon Scale Remover, Micromet Plates, Calgon Algaecide and Biocide RP, Banox,® Ice Machine Cleaners and Treatment, Gas Leak Detector. Each one is a leader in its field.

CALGON COMPANY

HAGAN CENTER, PITTSBURGH 30, PA.



**DIVISION OF HAGAN
CHEMICALS & CONTROLS, INC.**

circle 18 on reader service card

Servicemen Agree...

BEACH-RUSS PORTABLE VACUUM PUMPS are made with features they desire

High Performance Characteristics

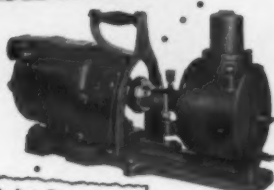
Completely Portable



Automatic Lubrication

Single- or Two-Stage

Long Life



Quiet Operation

Minimum Attention

Valves Eliminated

BEACH-RUSS COMPANY
6200 GRAYBAR BLDG., NEW YORK 17, N. Y.

Send descriptive literature covering
☐ Model O Single-Stage Vacuum Pumps.
☐ Model A Two-Stage Pumps.

NAME.....

COMPANY.....

ADDRESS.....

CITY..... ZONE..... STATE.....

BEACH-RUSS CO.

6200 GRAYBAR BUILDING
NEW YORK 17, N. Y.

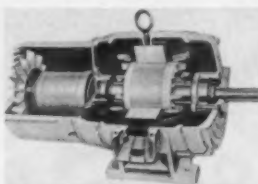
circle 15 on reader service card

90

Product DATA

Continued from page 88

cooled designs. Have stator and rotor construction, multi-speeds for slow in-



feed speeds and faster withdrawal speeds, rolled shell shaftless designs for direct built-in drives.

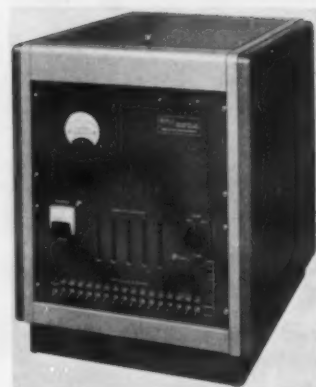
circle 172 on reader service card

Particle counter

Product: Self-contained instrument that counts particles in atmosphere (Model PC200A).

Manufacturer: Royco Instruments, Inc., Palo Alto, Calif.

Features: Presents immediate displays of numbers of particles present in 15 sub-ranges of sizes from 0.32 to 8.0 microns dia. Counts appear on decade counters, digital tape, or strip-chart. Automatic



programming included for 0.3, 1.0, 3.0, or 10.0 minutes of monitoring on any selection of sub-ranges in sequence. Maximum count rate at 100 cc of air per minute is 7340 particles. Weighs 220 lb. and measures 24 x 30 x 31".

circle 173 on reader service card

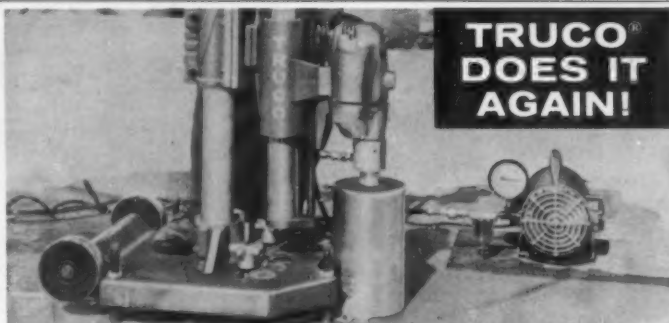
Heat exchanger

Product: Self-contained heat exchanger package.

Manufacturer: Strong Electric Corp., Toledo, Ohio.

Features: Rated at 12,000 Btu/h in continuous use with ambient air 100 F and inlet water temperature of 180 F.

Continued on page 92



Tru-Vac® Vacuum Pad anchors machine to drill 300 holes up to 6" O.D. in 9" extra hard aggregate with 4 to 6 rods per hole.

PROJECT: Methodist Hospital of Central Illinois, Nurses' Dormitory, Peoria, Ill. **EQUIPMENT:** Truco Model A Portable Diamond Drilling Machine; Truco Tru-Vac Vacuum Pad; Truco Diamond Drill Bits. **JOB:** drill nearly 300 holes in lift floor slabs 9" thick, extra hard aggregate, heavily reinforced with rods 1" to 1 1/4" dia.; most holes had 4 to 6 rods. Holes 2" to 4" for electrical services; 3" to 6" for water, sewer, fire lines.

No anchor holes allowed, no ceiling against which to jack telescoping center column of Truco machine. Contractor used Truco Tru-Vac Vacuum Pad to anchor machine to floor with up to 1000 actual pounds of vacuum. Holes averaged under 20 minutes each including set-up. Write for Bulletin SC-7.

TRUCO MASONRY DRILLING DIVISION

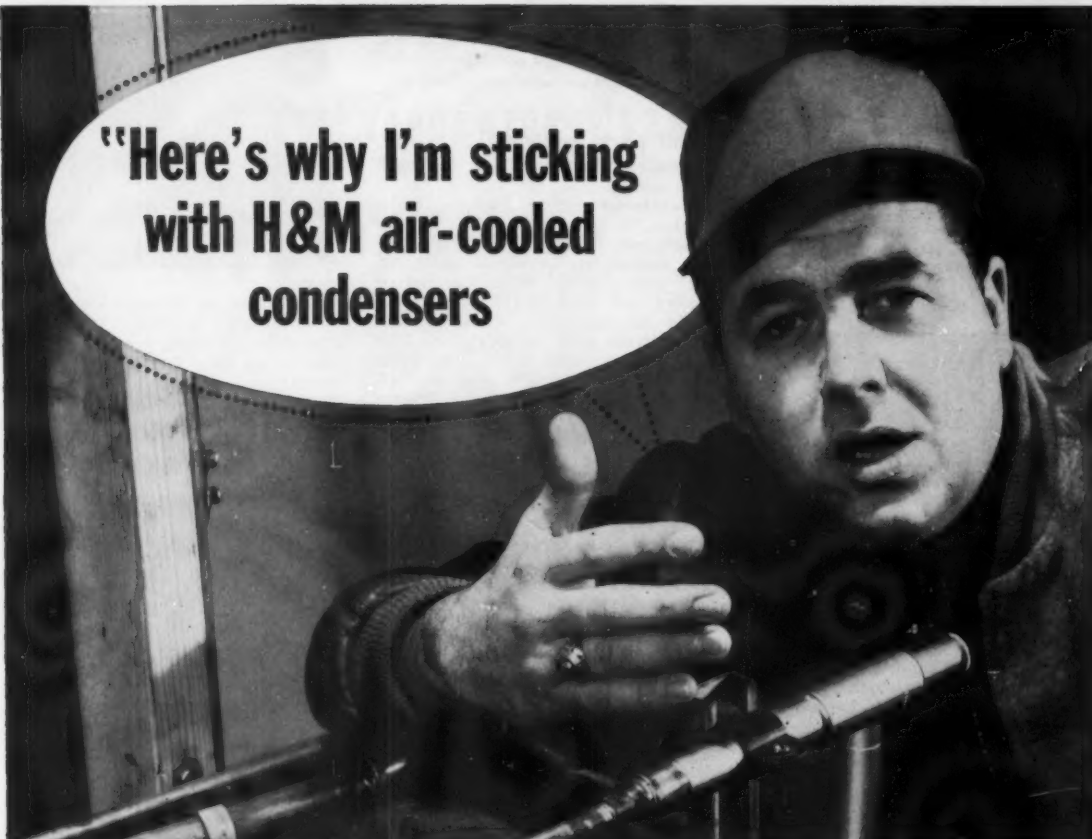
Wheel Trusing Tool Company

191-3200 W. DAVISON AVENUE

DETROIT 38, MICHIGAN

circle 85 on reader service card

MARCH 1962/THE REFRIGERATION & AIRCONDITIONING BUSINESS



**"Here's why I'm sticking
with H&M air-cooled
condensers**

***... H&M's Limitrol valve
lets you use them year-round!"***

"Many of my air conditioning and refrigeration systems have to operate 12 months a year. But cold weather used to raise cain with compressor-condenser balance.

"Then I learned that Halstead & Mitchell had a Limitrol pressure modulating valve that adjusts their air-cooled condenser capacity to compressor head pressure, whatever the outside temperature. What's more, H&M gives me multiple circuiting at no extra cost!"

You'd do well, too, to standardize on H&M Air-Cooled Condensers. There are propeller fan models with vertical or horizontal air discharge, and centrifugal fan models for inside installation with ductwork. Capacities of 5 to 100 tons.

Want more information? Call your parts wholesaler or write for Bulletin AC-102. Halstead & Mitchell Co., Bessemer Building, Pittsburgh 22, Pa.

Air-Cooled Condensers • Air Handlers and Coils • Cooling Towers • Water-Cooled Condensers



Halstead & Mitchell

circle 32 on reader service card

Product DATA

Continued from page 90

Consists of positive displacement gear-type pump, reservoir, radiator coil unit for heat removal, fan, flow indicator, associated fluid fittings. Provides for 3/4" o.d. copper or aluminum tube run on pressure side. Pump delivers 1.25 gpm



with discharge pressure up to 100 psi. Reservoir holds 1.5 gal. and has large permanent screen in suction line to protect pump from foreign matter. Fan and pump mounted on motor shaft. Wired for 115 v., 60-cycle operation and draws 5.2 amps. from line but connections changeable for 230 v. service.

circle 174 on reader service card

Pipe hanger

Product: Hanger for banks of electrical conduit and pipe.

Manufacturer: Stamperhanger Co., Oakland, Calif.

Features: Has 1-piece clamps; immediate, automatic, and permanent alignment; interchangeability of pipes within bank without moving adjacent pipes; and wide variety of clamp sizes. Conduit or pipe held against channel iron by spring alloy aluminum clamps which slide over pipe and held by slots in channel. Cam holds clamp in place.

circle 175 on reader service card

Deburring tool

Product: "Burr-Bit" deburring tool.

Manufacturer: Vernon Devices, Inc., Mt. Vernon, N.Y.

Features: Fits all makes of pipe taps from 3/8" to 1". Removes burr as tap is withdrawn from threaded hole. Single



conical springs permit deeper tapping and can be used with friction or lead screw tappers, straight and tapered holes.

circle 176 on reader service card

Small parts cabinet

Product: Drawer cabinet for small parts storage.

Manufacturer: Bay Products, Philadelphia, Pa.

Features: Permitting modular stacking, cabinet is individual all-welded steel unit. Can be placed on top of another and stack locked by inserting 1/2"-dia. rod down each of rear corners. Each drawer may be subdivided into many compartments by cross dividers adjustable on 1" centers. Cabinets are 33 1/2" x 10 1/2" and either 11 1/2" or 17 1/2" deep with either 18 or 24 drawers. Gray baked enamel finish.

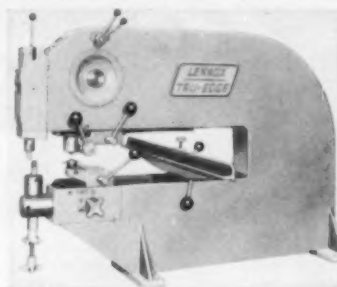
circle 177 on reader service card

Shearing machine

Product: Shearing and forming machine (Bench model TE-100).

Manufacturer: Lennox Tool and Machine Builders Div., Lennox Industries, Inc., Lima, Ohio.

Features: Has edge-cutting capacity up to 12 gage in mild steel plate and 16 gage in stainless steel; 1/2 hp., 110 v., single-phase motor; variable stroke length



from 0.022 through 0.110; and 1750 through 3500 strokes per minute. Cuts from 8 to 15' of material per minute. Offers 3-position arrangement in lower tool holder and throat depth of 32 1/2".

circle 178 on reader service card

Evaporative cooler media

Product: "Coolpad" evaporative cooler media.

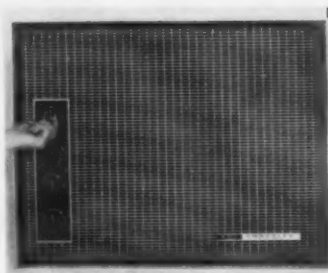
Manufacturer: Research Products Corp., Madison, Wis.

Features: Treated with compound that inhibits growth of fungi to eliminate deterioration of pads. Consists of continuous slit and expanded fiber sheets between exterior layers of slit and expanded aluminum. Available in rolls 36" wide and 20' long.

circle 179 on reader service card

Room airconditioners

Product: Four series ("Imperial," "Titan," "Power King," "Casement") of 1961 room airconditioners.



Manufacturer: Airtemp Div., Chrysler Corp., Dayton, Ohio.

Features: Window installation kit applicable on 14 of total of 20 models in the four series measures 23 1/2" x 15 1/2". "Titan" offers 28,000 and 23,000 Btuh and cools up to 1800 sq.ft. Both "Imperial" and "Power King" have air door to deflect air flow from 15 to 90 degrees, simplified controls, and decorator panel. "Casement" permits installation without window or frame alteration. "Imperial" in three models, "Power King" in 11 models, "Titan" in four models, "Casement" in two models.

circle 180 on reader service card

Air handling unit

Product: Impeller, package-type air-handler ("Twinalator").

Manufacturer: Clarage Fan Co., Kalamazoo, Mich.

Features: Fresh air can be directed by adjustable louvers or ducted; exhaust air is drawn from space and discharged to atmosphere; and air can be exhausted from under roof or ducted from sources. Applicable for temperatures to 200 F and for gases and fumes. Has weather-



protected construction; shaft and pre-lubricated sealed ball bearings shrouded from air stream; bird screens on inner and outer channels; and inner and outer cylinders.

circle 181 on reader service card

Vibration analyzer

Product: Vibration signal analyzer and portable balancer (Model 41).

Manufacturer: RayData Corp., Columbus, Ohio.

Continued on page 94

SPECIFY • INSTALL

ALCO EVAPORATOR PRESSURE REGULATORS



TYPES 15, 16, 18
Refrigerant 12
Refrigerant 22
Ammonia

*Your protection from
freeze-up*

- SODA FOUNTAINS
 - BEVERAGE COOLERS
 - PRODUCE CASES AND PRODUCTS
 - PLATING BATHS
 - WATER CHILLERS
- from the smallest to the largest

*Eliminates
tube bursting*

ALCO'S EVAPORATOR PRESSURE REGULATORS are designed, engineered and manufactured by ALCO, under ALCO'S HIGH QUALITY CONTROL SYSTEM—to efficiently maintain evaporator pressure in either a single or multiple system—regardless of load changes.

ALCO EPR VALVES are available from $\frac{1}{2}$ " to 6" port sizes and all connections up to and including $6\frac{1}{8}$ " O.D.F.—FOR ALL REFRIGERANTS.



TYPE 760
Refrigerant 12



TYPE 435
Refrigerant 12

Call your ALCO Wholesaler, Write
for Specifications Bulletin #183-57



- BUY SECURITY
- BUY QUALITY
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8221

ALCO VALVE CO.

343 KINGSLAND AVE. • ST. LOUIS 8, MO.

The one complete line of refrigerant controls: Thermostatic Expansion Valves • Refrigerant Distributors
Solenoid Valves • Suction Line Regulators • Flooded Evaporator Controls and Reversing Valves

circle 7 on reader service card

BUILD YOUR BUSINESS ON \$43.00!



**Install • Service •
Find and Fix Leaks**
with the

PREST-O-LITE Refrigeration and Air Conditioning Outfit

This single compact kit costs only \$43, yet contains every essential piece of equipment for your work. You get three interchangeable open-flame stems to provide the right air-acetylene flame for soldering, brazing, or heating. Fit the sensitive leak detector stem to the same torch handle, and you can pinpoint the tiniest halide gas leaks—as little as 100 parts in 1,000,000 parts of air. Compare that with soapy water!

In one sturdy carrying case, the kit also includes an adjustable gas pressure regulator, torch handle, and hose—everything for the installation, repair, and everyday maintenance of all types of refrigeration and air conditioning systems. See it at your Linde supplier. Or write Dept. RAC-03, Linde Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, N.Y.

**LINDE
COMPANY**

**UNION
CARBIDE**

"Linde," "Prest-O-Lite," and "Union Carbide" are registered trade marks of Union Carbide Corporation.

circle 43 on reader service card

Product DATA

Continued from page 92

Features: Incorporates modular construction and transistorized circuitry. Voltage can be varied from 50 microvolts to 100 volts. Amplitude range from five microinches to 100 millinches, frequency range from three to 10,000 cycles per second, velocity range from 50 microinches per second to 100 inches per second. Utilizes strobe light and variable frequency filter system.

circle 182 on reader service card

Heating unit cradle slide

Product: Cradle slide for baseboard heating elements.

Manufacturer: Edwards Engineering Corp., Pompton Plains, N.J.

Features: Permits free longitudinal movement of element during periods of heating expansion and cooling contrac-



tion and eliminates metallic noise. Slide snaps into place on all Edwards baseboard units, and is already furnished in position on packaged heating elements.

circle 183 on reader service card

Roof-top airconditioner

Product: "Skyliner" line of roof-top airconditioner.

Manufacturer: Janitrol Heating and Air Conditioning Div., Midland-Ross Corp., Columbus, Ohio.

Features: Designed specially for 1-story buildings, unit features gas-fired heating and air-cooled airconditioning. Circulates air through short concentric supply-return duct and ceiling diffuser beneath unit. No ductwork, vent stack, or inside space needed. Requires no water or sewage service, no refrigerant piping or charging, and no complicated wiring. Adjustable fresh air inlet permits blending of filtered outside makeup air up to 1/2 of total volume.

circle 184 on reader service card

Capillary tube tester

Product: "E-B Tester" capillary tube tester.

Manufacturer: Sealed Unit Parts Co., Inc., New York, N.Y.

Features: Meter is 3/8 x 6" and will help serviceman decide whether to change only clogged strainer or both strainer and capillary tube. Will also

Continued on page 96



Had Enough?

Switch to a

READING

Job-Planned
UTILITY BODY



Don't pile it... file it!

If you're spending as much time looking for tools and equipment as you spend on the job, it's time to make the smart switch—to READING! "Magic Stowaway" compartments keep everything neatly filed, at your fingertips when and where you need it. You save time and money on every

call! Reading Bodies are built by master mechanics for master mechanics... mass-produced to cost you less. ★Get the Proof! See your truck dealer today for a free demonstration and all the facts. Or write direct for catalog and name of local distributor.

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circle 60 on reader service card

MARCH 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS

We don't know what noise annoys an oyster...



... but we do know plenty about eliminating *industrial* noise. Koppers AIRCOUSTAT is the *pioneer product* for controlling duct-transmitted noise in air handling systems ... and Koppers has the *longest, broadest experience* in the whole field of industrial sound control, from air conditioning to aircraft engines.

AIRCOUSTAT® is the quality standard in its field. Its pioneer engineering is matched by premium construction that features heavier gauge metal than competitive units. It is assembled with care to give the quality performance promised by its original design. And AIRCOUSTAT provides *guaranteed* attenuation certified in the laboratories of independent research organizations.

Write today for your copy of the Aircoustat Selection Manual, a quick guide to eliminating noise in all air-handling systems, to: KOPPERS COMPANY, INC., Sound Control Dept., 3103 Scott St., Baltimore 3, Md.



SOUND CONTROL

Engineered Products Sold with Service

Aircraft/Engine Test Enclosures

Portable Jet Run-Up Silencers

Audiometric Rooms

Soundmetal Panels

Product DATA

Continued from page 94

tell if replacement capillary tube installed is right size. Dial face of meter is calibrated in average evaporator temperatures. Indicating pointer will show ac-



tual temperature of evaporator when unit charged with refrigerant. Meter will diagnose efficiency of compressor before charging it.

circle 185 on reader service card

Lobster pool

Product: Lobster pool with capacities of 100 to 250 lb.

Manufacturer: Dayno Sales Co., Lynn, Mass.

Features: Is self-contained and plugs in any standard outlet. Gravity filter system assures clear water that can be drained in minutes. Has built-in reservoir tank, thick insulated walls that prevent condensation, V-shaped bottom to eliminate sediment deposits. Finished in formica.

circle 186 on reader service card

2-Speed saw

Product: Combination of two all-purpose reciprocating saws ("Recipro Saw" Model 701).

Manufacturer: Skil Corp., Chicago, Ill.
Features: Is improved version of Mod-



el 700. Has two speeds, 1000 and 1400 strokes per minute, for cutting different

gages and densities of metal. Low speed for stainless steel, other hard alloys, cast iron; high speed for mild steel and non-ferrous metals. For any metal-cutting job needing portable tool for cutoff or pattern work. Standard equipment is four blades, blade clamp key and holder, carrying case; flush-cutting adapter is optional.

circle 187 on reader service card

Masonry drilling machine

Product: Portable masonry drilling machine (Model K-500 "Versadrill").

Manufacturer: Kor-It Co., Inc., Santa Clara, Calif.

Features: Drills holes from 1 to 10" dia., either vertically or horizontally. Spindle speeds of 500, 1000, 1500, 2500 rpm to produce fastest penetration rate for diameter bit used. Powered by 5 hp motor, complete cast aluminum and steel machine weighs only 275 lb.

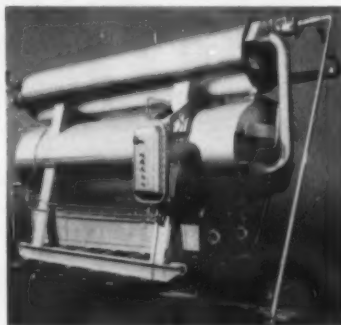
circle 188 on reader service card

Gas absorption cooler

Product: Gas absorption cooler for commercial and industrial applications (Model C-150-1).

Manufacturer: Statham Instruments, Inc., Los Angeles, Calif.

Features: Operates on principle of producing cold from a gas flame by application of the two-effect generator to



a lithium bromide-water absorption cycle. Has refrigeration capacity of 150 tons and will cool 40 million cu.ft. per day of sour well-head natural gas from 90 to 60 F. In the process, there is one Btu removed from chiller for each Btu of heat supplied to the unit.

circle 189 on reader service card

Pipe thermometer

Product: Pipe thermometer that reads temperatures of pipe surface.

Manufacturer: Abrax Instrument Corp., Jamaica, N.Y.

Features: Clips to steam, water, refrigeration, and gas pipes by twin spiral spring clips, eliminating branching or drilling. Thermometers are pre-calibrated to cut down error through heat losses of radiation or convection. Can be used for all pipes up to 3 1/2" dia., and have 2-degree increments. Model APFT 460 for 32 to 320 F range; APFT 461 for -14 to 134 F range.

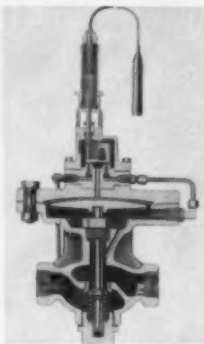
circle 190 on reader service card

Temperature regulator

Product: "Eventemp" temperature regulator for storage-type heating and cooling applications.

Manufacturer: Leslie Co., Lyndhurst, N.J.

Features: Is single seated, self-contained, and diaphragm actuated. Has a lever-type internal pilot and teflon stem seal. Temperature variations sensed by liquid filled thermo-element which is interchangeable when regulator is on the



line. Available in cast iron or bronze bodies, with screwed or flanged ends in sizes from 1/2 to 4". Inlet pressures to 175 psi, temperatures to 500 F.

circle 191 on reader service card

Return air grilles

Product: High capacity return air grilles (Design No. 64).

Manufacturer: Hart & Cooley Mfg. Co., Holland, Mich.

Features: Have angular fin design, with fins spaced 1/2" apart and when set at 30-degree angle, opening is almost vision-proof. Baseboard and sidewall types for any installation. Baseboard grilles with horizontal fins available in eight standard sizes; sidewall grilles with either vertical or horizontal grilles in standard sizes through 20 x 24" and 30 x 24", respectively.

circle 192 on reader service card

Ice shaving machine

Product: "Sno-Master Model D" automatic ice shaving machine.

Manufacturer: Sno-Master Mfg. Co., Baltimore, Md.

Features: Reversing switch eliminates jamming. Is constructed of aluminum and stainless steel, weighing 65 lb. Insulated ice hopper holds 25 lb. of ice which is shaved as needed. Has slip-proof handle and wide bottom plate and measures 10 1/2 x 20 x 35".

circle 193 on reader service card

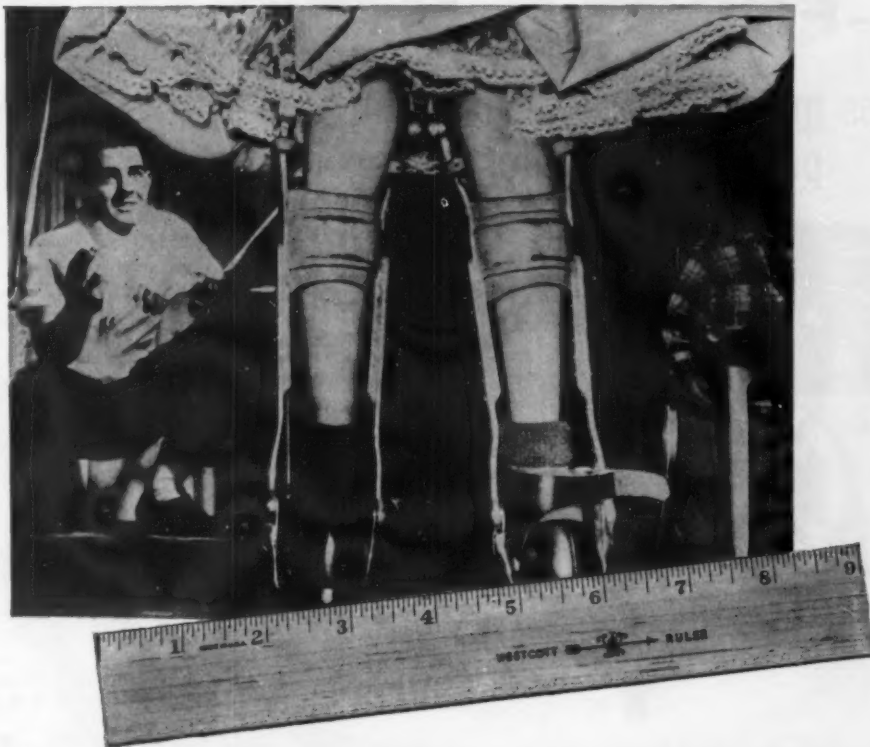
Dirt and dust screens

Product: Eight new models of screens for dirt and dust control.

Manufacturer: CRS Industries, Inc., Philadelphia, Pa.

Features: Units are made of heavy gage metal, welded framing with rein-

Continued on page 98



STEPS...measured in inches,

yet each is one of accomplishment for a crippled child. . .progress toward freedom from braces . . .a degree nearer to the deep-rooted hopes to walk.

EASTER SEALS -- through care and treatment, research and education -- help many thousands of these children.

No dollar you spend will ever bring greater reward than the ones you give to bring care and hope to crippled children.

So...for all the times you've longed to help them...give to **EASTER SEALS** now!



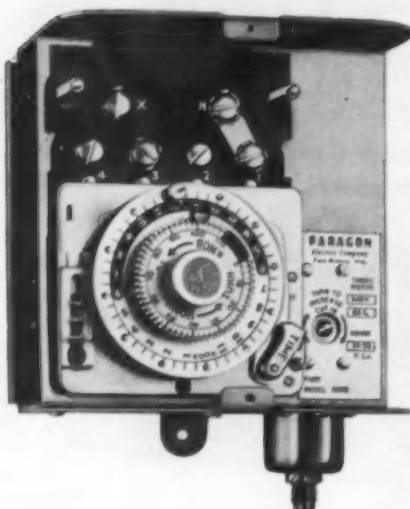
1921-forty years of care for the crippled-1961

National Society for Crippled Children and Adults

2023 W. Ogden Ave., Chicago 12, Ill.

PARAGON'S 8200 SERIES D-FROST-O-MATIC®

has more exclusive features for more
precise, safer defrost control



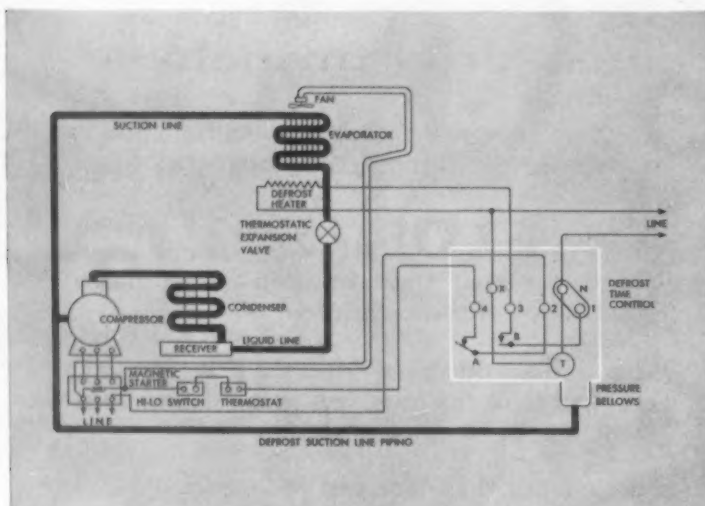
EXCLUSIVE: Length of defrost cycle determined by pressure increase . . . not by time.

EXCLUSIVE: 100% adjustable fail safe protection. Will transfer switch if equipment is not brought back into a refrigeration cycle by an increase in pressure within a specified period of time. Pressure cut-in is adjustable too.

EXCLUSIVE: Heavy-duty, self-starting, 4-watt industrial-type motor.

EXCLUSIVE: Adjustable pressure cut-in.

For complete details write for BULLETIN NO. 5949.



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ELECTRIC COMPANY
1827 Twelfth St. • Two Rivers, Wis.

TIME IS MONEY...CONTROL IT WITH PARAGON

circle 89 on reader service card

Product DATA

Continued from page 96

forced corners, heavy gage sheet steel metal enclosure and access door. Screens are of heavy galvanized interwoven wire mesh. Safety switch grounds and de-energizes all parts of unit when access door opened. Four models have top capacity of 5000 cfm with four models for 10,000 cfm.

circle 194 on reader service card

Bi-metal thermometer

Product: Bi-metal dial thermometer for measuring temperature on ferrous materials.

Manufacturer: Industrial Service Co., Providence, R.I.

Features: Three types: measure temperature only, have maximum reset hand, and have electric contactor. Available in temperature ranges from -60 to 700 F and accuracy within 2%. Magnets hold thermometer to metal.

circle 195 on reader service card

Baseboard damper

Product: Damper for Model L "Heat-rim" baseboards.

Manufacturer: Plumbing & Heating Div., American-Standard, New York, N.Y.

Features: Has a graduated opening with unlimited settings possible between open and closed positions so heat flow will meet installation requirements exactly. Damper blade flange gives permanent alignment and a steady fit. To install the damper, a friction plate inserts in the bracket punch-out and damper blade snaps into place under the plate.

circle 196 on reader service card

Rubber boot

Product: Molded rubber boot for using tubular heaters and other applications needing moisture protection.

Manufacturer: General Electric Co., Schenectady, N.Y.

Features: For operation from -40 to 185 F. Protects heater terminal connections from frost or moisture accumulation. Is free of taste or odor and is oil-resistant. Is 1 1/2" long and 7/16" dia. Tubular heaters with 0.260 and 0.315" dia. of various metals supplied with boot.

circle 197 on reader service card

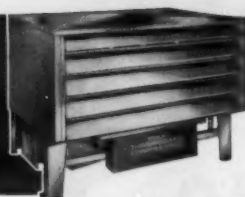
Duct coupling

Product: "Ventiduct" flexible coupling
Manufacturer: Marman Div., Aeroquip Corp., Los Angeles, Calif.

Features: Can be easily cut into various lengths and connected with one nut and bolt of coupling, providing a strong airtight, leakproof duct connection.

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THROW YOUR COMPRESSOR *OUT!



*OUTSIDE, THAT IS!

KRAMER'S outdoor compressor is the only compressor designed to operate outdoors for any application under all temperatures and weather conditions.

Completely assembled, wired, tested and factory run-in, it arrives on the job ready to operate. Simple hookup eliminates costly installation and control adjustment time. Kramer's outdoor compressor ends waste of valuable indoor space.

WRITE FOR BULLETIN

KRAMER OUTDOOR COMPRESSOR

KRAMER TRENTON CO. • Trenton 5, N. J.
46 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

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MR. DEALER:

**your
customers
need BOTH!**

**PURE
ICE CUBES**

Perfect cubes
solid, hard, clean

**PURE
CRUSHED ICE**

A choice of five
sizes of crushed ice



40
OUR FORTIETH YEAR
★ UNIFLOW ★

*T.M. REG.
U.S. PAT. OFF.

**Only KOLD-DRAFT gives you perfect
— ICE CUBES and pure CRUSHED ICE!**

Some franchises still available for a limited number of territories... Write

**KOLD-DRAFT DIVISION
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... The World's Most Complete Line of Refrigeration Products.



Other Fine KOLD-DRAFT Products
Beverage Coolers Draft Beer Dispensers Soft Drink Dispensers Walk-In Coolers & Freezers Water Coolers

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Wholesaler

ACTIVITIES

Continued from page 66

warehouse under one roof, Chase provides more stock and a better selection to its customers. President John P. Glass told us his self-service policy eliminates waiting for fitters and servicemen. An emergency check-out counter further speeds service.

Chase is also offering cutting and threading of pipe to 6" dia.; mechanical handling of heavy equipment; and paved parking facilities.

New Marketing Concept Is Started by Modine

A new and comprehensive marketing program for wholesalers has been unveiled by Modine Mfg. Co. This system, which radically changes the firm's commercial terms of doing business, was introduced at Modine's recent central regional sales meeting.

The new program incorporates findings of three separate market-wholesaler surveys. "Actually," said Modine vice president C. C. Wilson, "the program is designed to sell through wholesalers, not to them. By selling to wholesalers, treating them as customers, we only succeed in filling their warehouses. We want to sell through the wholesaler to get our products to the ultimate customer."

Modine has more than quadrupled the number of products it plans to sell exclusively through wholesalers. It is also more than doubling its product lines, many of which are included in the new marketing program.

"It's our iron-clad policy," says Wilson, "to sell all designated wholesaler products exclusively through stocking wholesalers."

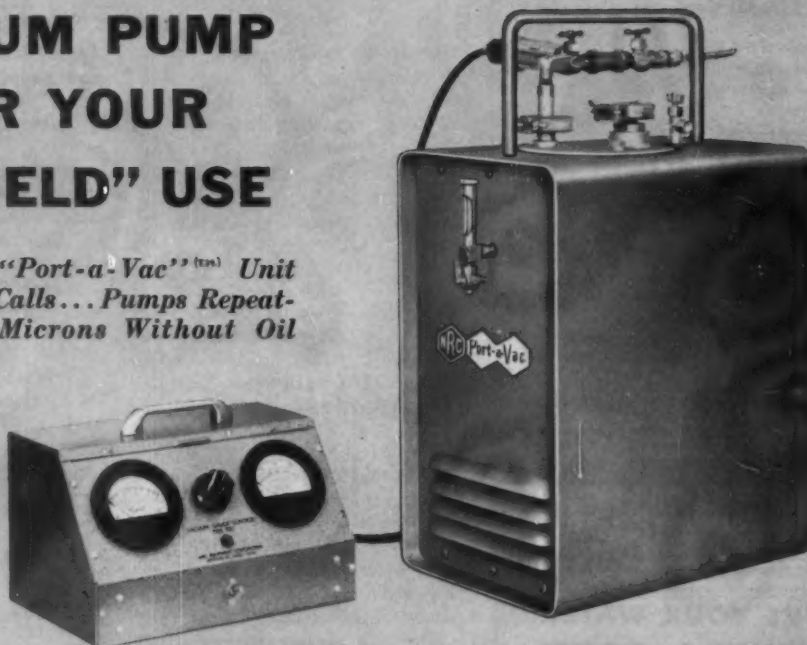
The company is attempting to insure coverage of all market areas with this new plan with as little overlap as possible. Modine hopes this plan will help its wholesalers sell more profitably and cut their operating costs.



THE NEW PACKAGED

VACUUM PUMP FOR YOUR "IN-FIELD" USE

*New NRC "Port-a-Vac"™ Unit
Cuts Service Calls... Pumps Repeatedly
to 50 Microns Without Oil Changes*



The new NRC portable vacuum pumping system is specially designed for evacuating air conditioning and refrigeration units at installation or maintenance.

CHECK these benefits you get with the Port-a-Vac:

- * No contamination of pump oil with water or refrigerant.
- * Lower in-warranty service costs...insures you against major cause of compressor failure.
- * Dependable electronic gauge serves as accurate guide to dryness—also checks for leaks.
- * Simplicity—Just two components: two-stage rotary gas ballast vacuum pump, thermocouple gauge.
- * Ease of handling—self-contained, easy-to-carry case.

This is the same NRC Model 2D Gas Ballast Pump that has been used so successfully by installation and service contractors for over three years. Now specially packaged for portability and convenience.

Write for complete literature.

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THE REFRIGERATION & AIRCONDITIONING BUSINESS/MARCH 1961

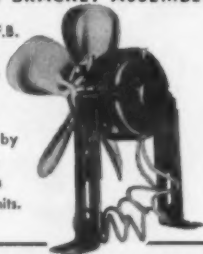


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AN ADJUSTABLE REPLACEMENT FOR HERMETIC UNIT CONDENSER FAN ASSEMBLIES

THE TRANSIRE MOTOR FAN BRACKET ASSEMBLY

The Transaire M.F.B. provides a single stock, all purpose solution to the replacement problem created by the great variety of condenser fans on all hermetic units.



- ADJUSTABLE TO WIDE VARIETY OF MEASUREMENTS—POSITIVE LOCKING AT ANY POSITION
- PERMITS USE OF ORIGINAL MOUNTING HOLES WITHOUT REFERENCE TO MODEL OR CATALOG NO.
- IMPELLER FAN AVAILABLE IN 4 DIFFERENT SIZES
- DUST PROOF MOTOR, RUBBER MOUNTED
- GUARANTEED FOR ONE YEAR

Write for details and prices (Give your wholesaler's name)

TRANSIRE MFG. CO.

Div. of Penn Electric Motor Co., Inc.
3080 Emerald St., Philadelphia 34, Pa.

GIVE YOUR WATER RUNNING ROOM

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Water Treatment



Water needs running room . . . it can't do its job when scale, rust, and other deposits build up on heat-exchange surfaces and in lines. Keep your cooling system free of clogging with specially formulated Anco Cooling Water Treatment.

Place can(s) recommended for your system in condenser pan or tower basin. Water agitation gradually dissolves contents, sending the components to work. One treatment lasts about a month, keeping your system operating with like-new efficiency. Ask your supplier today for details, or write us.

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People ON THE MOVE

Robert Ely becomes midwestern district manager of Marsh Instrument Co., Div. of Colorado Oil and Gas Corp., replacing James Kelly. Kelly moves to Philadelphia, Pa., office as district manager. Don L. Warner, former Philadelphia district manager, is now assistant sales manager of the firm.

New heating and cooling coil salesman for Danville Div., Bohn Aluminum & Brass Corp. is D. C. McCulley. His territory is Nebraska and parts of Iowa.

New vice president of Crane Packing Co. is Carlton N. Chandler, who was formerly secretary and treasurer. Glenn Moore, previously controller for National Gas Cylinder Div. of Chemtron Corp., replaces Chandler as treasurer, but the new vice president remains as secretary. Chandler also is treasurer of the firm's subsidiary in Canada.

Mueller Brass Co. appoints Charles T. Nelson as manager, plumbing and heating field sales promotion, and Wayne Woolman as manager of export sales.

Richard F. Kelly moves up from manager of distribution to general sales manager for packaged products at York Div., Borg-Warner Corp. He replaces W. E. Landmesser who is retiring.

Irv Secord returns to Drayer-Hanson as national sales manager for all domestic and foreign operations. He held a similar position with the firm before he left to join Hi-Press Air Conditioning of America, Inc., which recently purchased Drayer making it a Hi-Press division. In his new capacity, Secord also will handle national sales for the adaptation of Hi-

Press small-pipe, high-velocity marine airconditioning systems to land uses.

Sherer-Gillett Co. promotes M. H. Strang from chief refrigeration engineer to newly-created post of director of research, refrigeration section. Moving up from assistant chief engineer to be Strang's assistant is Dan H. Walters.

New southwest regional manager for engineered machinery sales at York Div., Borg-Warner Corp. is Edward N. Kerrigan. He's been central region manager of field services in Chicago, Ill.

Philip B. Lockwood becomes West Coast branch manager for Airtemp Div., Chrysler Corp., after serving that area as a sales engineer since 1959.

Robert J. Berkshire is vice president, marketing of Air Conditioning Div., American-Standard. He was formerly general marketing manager.

Trane Co. appoints three sales office managers. They are Willard S. Levings in Boston, Mass.; Joseph E. Appelt, Grand Rapids, Mich.; and Richard W. Lehman, Buffalo, New York.

New southwestern regional manager of Albion Div., McGraw-Edison Co. is Lacy Blake. His territory is Texas, Oklahoma, Louisiana, Colorado, Utah, and New Mexico.

Pennsalt Chemicals Corp. appoints Dawes Walter as manager of advertising and public relations and Richard S. Lee as assistant advertising manager.

Continued on page 104



See your wholesaler now for a new "Zephyr"

Redesigned valve makes "Zephyr" cylinders for FREON® stronger, easier than ever to use

While service engineers praised the light weight and convenient shape of the first "Zephyr" cylinders, they suggested several additional improvements. We've made them—to make your job of handling Freon® premium quality refrigerants even easier. And your refrigeration and air conditioning wholesaler now has these newest "Zephyr" cylinders for you—with a free bonus to boot!

COMPLETELY NEW VALVE. "Zephyr" cylinder valves have been redesigned to provide new convenience, strength and safety. Wrenches or adapters are no longer needed. You can now operate the valve with a strong but easy-to-turn handwheel—and attach charging hoses directly to its standard 1/4-inch outlet. The entire valve assembly is stronger and contains a built-in pressure-relief device which, with the fuse plug in the cylinder, makes the "Zephyr" the safest service container you can buy.

Add these new features to all the other conveniences of "Zephyr" containers for "Freon-12" and "Freon-22", and you can see why it will pay you to get your new, factory-filled "Zephyr" cylinders now.

Carry them. "Zephyr" cylinders are lightweight, with a built-in carrying handle that also protects the valve . . . now make a 50-lb. size practical.

Stack them. "Zephyr" cylinders are wider, shorter . . . can be stacked for space-saving storage, stand up on trucks.

Invert them. "Zephyr" carrying handle also acts as a stand, needs no blocks, permits easy liquid charging.



FREE BONUS OFFER! Look for the bonus envelope attached to your new "Zephyr" cylinder. It entitles you to a free can of new Du Pont aerosol "Slipspray"—a *dry*, all-purpose lubricant with hundreds of uses at home or work. "Slipspray" leaves no oily film . . . stops sticking, binding, squeaking on all surfaces. Offer expires June 30, 1961.

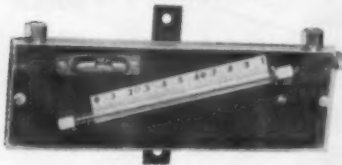
FREON® premium quality
REFRIGERANTS



Better Things for Better Living...through Chemistry

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**YOU GET accuracy
plus economy
in this NEW Ellison
"AFS" Air Filter Gage**



The new Ellison Series AFS Air Filter Gages show when air filters have become clogged and need changing. Easy to install. Easy to read. Clear plastic snap-on cover keeps scale clean. A really accurate, well-made instrument at a surprisingly low cost. Eliminate guesswork and cut costs—no need to change filters until gage so indicates. A new addition to the most complete line of air filter gages. Send for Bulletin 214-C.

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Draft Gages, Bell and Diaphragm—Inclined Draft Gages—Portable Inclined Tube Gages—Vertical Tube Gages, Oil, Heavy Liquid, Mercury, Single and Multi-tube—U-gages—Air Filter Gages, Complete Line—Pilot Tubes—U-Path Steam Calorimeters—Portable Gas Analyzers, Orsat Type—Alarm Systems—Orifice Flanges and Plates—Flow Tube Meters—Condensate Traps.

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Dryers

- One piece copper construction
- Filled with PA-400 Silica Gel
- Complete acid removal
- Cap-tube connections
- OD solder to 1/2 in.
- Double sealed to insure dryness
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Hermetic

Strainers



- Wide range of mesh screen sizes
- One piece copper shell
- Cap-tube connections
- Solder connections to 1/2 ODS
- Ideal for liquid and suction lines
- Screen areas from 1 3/4 sq. in. to 25 sq. in.

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People

ON THE MOVE

Continued from page 102

Lin Grisham is appointed sales engineer by Danville Div., Bohn Aluminum & Brass Corp. His territory is central Illinois, central Indiana, and eastern Kentucky.

Gibson Refrigerator Sales Corp., Sub. of Hupp Corp., promotes **D. H. Heinlen** and **J. F. Klintworth** to vice president's posts. Heinlen, formerly manager, advertising and sales promotion, is vice president of advertising; Klintworth, formerly manager, room air conditioner and dehumidifier sales, is vice president for these sales.

Peter J. Dalton joins Air Conditioning Inc. as vice president, sales. He held a similar position with Welbilt Air Conditioning & Heating Corp.

Dole Refrigerating Co. appoints **Loris M. Nelsen** as national service manager. **George E. Harrington** is added to the sales engineering staff.

Donald H. Paulson joins Rybolt Heater Co. as sales manager. He was marketing manager, F. E. Myers & Bros. Co.

Paul E. Evans joins Dryer Dynamics Corp. as sales manager.

McCray Refrigerator Co., Inc., appoints **Hugh E. Cooper** as vice president, sales, and **Eugene J. Andrysiak** as vice president, manufacturing. Cooper was general manager, sales, and Andrysiak was work manager.

Carrier Air Conditioning Co. appoints **Herman C. Hoffman** to new post of general sales manager. In other changes, **John F. Kooistra** becomes manager, direct sales; **George T. Long**, manager, distributor sales; and **John F. Manion**, director of marketing services.

John P. Soule is named product manager, terminal air conditioning for American-Standard Industrial Div. He's been manager, hydronic air conditioning for three years.

David C. Grimm is St. Louis, Mo., representative for Acme Industries, Inc. He will head sales engineering activities for Acme in that area.

New vice president of Viking Copper Tube Co. is **Frank Higham**, director of manufacturing for the firm since 1957.

New sales engineer in Oklahoma City, Okla., territory for Dunham-Bush, Inc., is **John R. Henderson**, Junior.



ATTENDING THE ANNUAL sales meeting of Ross-Temp Inc. were regional managers from all over the nation. The 1961 new products line was shown and merchandising plans for the year were announced. Seated (left to right): **Leonard Hickcox**, regional manager; **Joe Zauner**, service manager; **Warren Wheary**, vice president; **John H. Seippel**, sales manager; **Louis J. Schneider**, president; **Christ Schneider**, secretary-treasurer; **Sigmund Stanis**, chief engineer; and **Walter Moran**, regional manager. Standing (left to right): **Ray Kerr**, **Lyle Todd**, **G. L. Van Sciver**, **R. N. McClellan**, **Dave Smith**, **Roger Wilson**, **Morton Mordell**, **Lewis J. Brooks**, **Dwight Cheatham**, **Melvin Wilson**, **Jack Finley**, and **William Clapp**, all regional managers; and **Ray Hudson**, advertising consultant.

York Div., Borg-Warner Corp. appoints **M. V. Bailliere, Jr.**, and **Caryl C. Lewis** as vice presidents. Bailliere is controller; Lewis, staff assistant to the president. Both will continue in their current positions.

C. Gilmore Ruston becomes president of Amstan Supply Div., American-Standard. Prior to this, Ruston was vice president, field operations of the division.

New sales manager for airconditioning products at Recold Corp. is **Sherman Singer**. **Walter L. Hilton** is new sales manager, refrigeration products.

New vice president, contract sales for Warren Webster & Co., Inc., is **David E. Morgan**. He's been director of research and development for past five years.

Mohawk Cabinet Co. promotes **Charles Ringland** as general sales manager with headquarters in the firm's Gloversville, N.Y., offices.

Gene Weisenberg becomes heating and airconditioning manager at Day & Night Mfg. Co. **A. J. Horn** heads the firm's new engineering services department.

Fedders Corp. elects **Joseph Giordano** to newly-created post of vice president, engineering. He was assistant to the president.

Mueller Brass Co. appoints **Dr. Franklin B. Rote** as director of research and development.

New national marketing manager of Genie-Air Products is **W. C. Walter**, formerly general sales manager of Norge Heat Div. and Ingersoll Conditioned Air Div., Borg-Warner Corp.

Fred F. Moore, Jr., is vice president of Kensico Tube Co., Div. of Robinson Technical Products. He joined the firm as general sales manager and will continue to head this department.

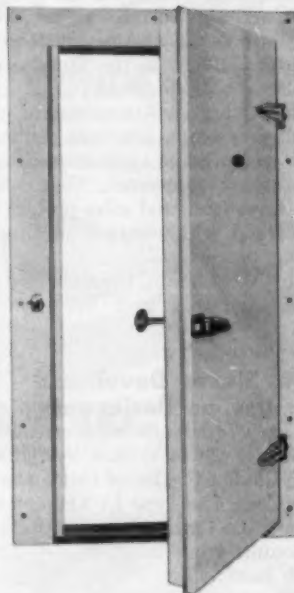


Hold on there! Back up a bit: you just rushed by some pretty important information. Before you pass this copy of **THE REFRIGERATION & AIRCONDITIONING BUSINESS** on to the next reader check it over once more. Did you spot the New Products pages? How about this month's selection of free data books and catalogs? You'll find both listed on the contents page. The handy Reader Service card will bring you details on any of them. Just fill it out and drop it in the mail.

Introducing

VIROQUA fiberglass COOLER DOORS

Formerly Walker Doors



MOLDED FIBERGLASS CONSTRUCTION

seals moisture out.

NO RUST OR WARPING

can't corrode or wear.

LIGHT IN WEIGHT

less than one-third other doors.

NO PAINT, NO UPKEEP

cuts maintenance cost.

COMPETITIVELY PRICED

costs no more for the best.

MANY MODELS AND SIZES

cooler, freezer and reach in doors.

Molded fiberglass cooler and freezer doors designed to fit today's refrigeration needs. A truly revolutionary product development. Write today for literature.

SELECT DISTRIBUTOR TERRITORIES OPEN. WRITE FOR COMPLETE INFORMATION

Viroqua Doors

Viroqua, Wisconsin

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BUSINESS *Briefs*

Continued from page 11

trolled environment lab for use in research programs for farm crops and commercial seed producers. A light-weight, absorption refrigeration system has been developed.

Controls Company Forms Research Group

A newly-organized research and development staff will carry out basic and applied research projects for Controls Co. of America. Headquarters will be in the firm's new facilities in Wauwatosa, Wis.

Researchers will concentrate on applied research activities dealing with new product applications, materials, and processes. They will also investigate and solve problems concerned with unusual manufacturing processes.

Roy W. Johnson, Controls board chairman, will direct the group.

New Sieves Developed For Use as Desiccants

A new grade of triple-strength molecular sieves is now available from Linde Co., Div. of Union Carbide Corp. The Type 4A XH sieves, tailor-made for use as a refrigerant desiccant, are produced in 4 x 8 mesh beads.

Officials say the sieves were developed to meet demands for a more rugged product for the refrigeration industry. Sieves reportedly have crush strength three times that of standard type 4A beads, and show better than three times resistance to attrition losses.

EXPANSIONS

Air Control Products, Inc. completes a new plant in Coopersville, Mich. It increases the firm's manufacturing capacity by more than a third.

John J. Nesbitt, Inc., Philadelphia, Pa., plans major expansion of

its manufacturing and assembly operations at costs of \$1.6 million. An 11-acre tract has been purchased. It includes a modern, one-story building. Since it already occupies the building, Nesbitt plans more construction in the same area.

MERGERS

Lau Blower Co., Dayton, Ohio, purchases Meier Electric & Machine Co., Indianapolis, Ind. manufacturers of propeller blades. Meier to operate as a division of Lau Blower.

John J. Nesbitt, Inc., Philadelphia, Pa., manufacturer of heating, ventilating, and airconditioning equipment, to acquire Norman Products Co., Columbus, Ohio, manufacturer of gas-fired heating, ventilating, and airconditioning equipment.

BOOK REVIEW

Title: Plumbing, Heating, and Piping Estimators' Guide.

Author: Paul G. Davis.

Publisher: McGraw-Hill Book Co., New York City.

Price: \$6.50.

This 213-page book shows the contractor how to arrive at accurate bid estimates in all phases of plumbing, heating, and piping jobs. It presents tested and practical industry standards and detailed bid summary sheets. Also listed are equipment and labor factors required and general accounting procedures. Includes more than 75 tables on labor costs plus methods of cost analysis that will aid the contractor in comparing his final bid against original estimates.

SALES FIGURES

Carrier Corp. looks to bigger earnings in '61 after drop in net profit for 1960. Officials blame two crippling company strikes; nationwide steel strike; and general business conditions for slump.

Mueller Climatrol reports gains in its heat pump line and newly-introduced electric furnace line. Central summer airconditioning sales up 34% over 1959.

Trane Co. reports a record sales year in 1960 with anticipated increase of 20% over 1959. President D. C. Minard anticipates consolidated sales to reach \$100 million.

ASSOCIATIONS

A 15-minute color film is offered home builders by Air-Conditioning and Refrigeration Institute in conjunction with its unitary airconditioner certification program. Film, "What You Should Know About Air-Conditioning," is available through ARI or National Association of Home Builders.

A well-rounded program is promised for the 39th annual convention of Oil Heat Institute of America, Apr. 23-27, at Statler-Hilton Hotel, Washington, D.C. The technical division symposium is scheduled Apr. 25; distribution division dealer-management conferences are Apr. 27.

Steps have been taken to form an indoor comfort bureau in Cleveland, Ohio, by National Warm Air Heating and Air Conditioning Association. Forty-seven firms signed cards and elected temporary officers.

New president of Ontario, Canada, chapter, American Society of Heating, Refrigerating and Air-Conditioning Engineers is L. N. Adams. He is secretary-treasurer, Marshall Refrigeration Co., Toronto, Canada.

Refrigeration industry representatives from 11 western states met at California State Polytechnic College in January for the 3rd annual California Association Refrigeration Service Engineers Society workshop.

Plans have been launched for 12th National Air-Conditioning, Heating & Refrigeration Industry convention and exposition, scheduled for Los Angeles, Calif., Feb. 12-15, 1962.

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Anchors by **Stic-Klips®**



Stic-Klips® are time and labor saving anchors and fasteners for attaching insulation, strapping, metal lath, wall fixtures, wiring and conduit to curved or flat metal or masonry surfaces. Stic-Klips® feature no surface drilling, quick fastening, no fire hazard and a strong positive bond. Send for free illustrated folder.

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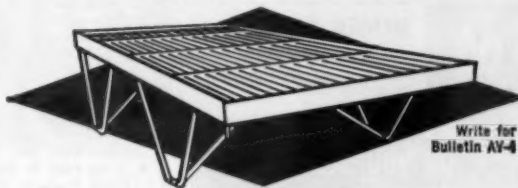


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Bulletin TT-653

WATER COOLED COAXIAL CONDENSERS

Domestic and sea water models

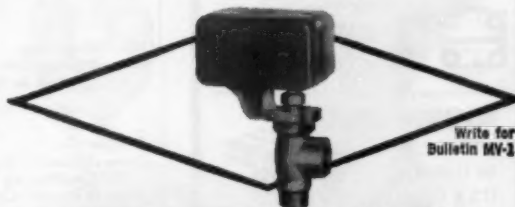
Reduce costs 40% . . . Reduce condenser water 35% . . . Reduce refrigerant charge . . . Stabilize capillary performance . . . Compact shapes.



Write for
Bulletin AV-4

AIRVEC

The completely silent Air Cooled Condenser
Never needs cleaning



Write for
Bulletin MV-3

MOTORIZED VALVES

For chilled water cooling systems and for heating systems . . . 100% positive shut-off . . . Compact . . . Low cost . . . Low Voltage . . . No current draw when open.



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"One of the nation's largest manufacturers of Residential and Commercial Boilers, Baseboard and Steel-Fin Radiation, Motorized Valves, Air and Water-Cooled Refrigerant Condensers."

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HP-41

**BEST BUY
FOR THE
MONEY**

**1 VALVE
PIERCES
4 TUBE
SIZES!**

3/16" | 1/4" | 5/16" | 3/8"

**DUO-TEST QUICK COUPLER
CHARGING LINES**

36" flexible line. Quick
Coupler elbow on one
end. Color coded in
sets.



Stocked by leading wholesalers everywhere



**MADDEN BRASS PRODUCTS
COMPANY**
AURORA 2, ILLINOIS, U.S.A.
EXPORT: AD AURIEMA, INC.
85 BROAD ST., New York, N. Y.

DO YOU SERVICE HERMETICS?

USE SEALED UNIT FOR



Complete line of
VALVES & GASKETS
for TUCUMSEH

ALUMINUM SOLDER

ANYONE CAN
DO IT NOW —
IT'S A CINCH!



**CAPILLARY AND
COMPRESSOR TESTER**

Checks the system in 3 MINUTES!

CAPILLARY GUIDE

Prevent burnouts
by using the
proper Capillary.
Use a Bullet
Strainer with the
oversized screen
area. AT A NEW LOW PRICE!



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